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(54) **ARTICLE OF FOOTWEAR WITH A BALL CONTACTING SURFACE**

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(51) **Int. Cl.**

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A43B 23/00	(2006.01)
A43B 5/02	(2006.01)
A43B 1/00	(2006.01)

(52) **U.S. Cl.**

CPC ***A43B 5/02*** (2013.01); ***A43B 1/0009*** (2013.01); ***A43B 5/025*** (2013.01)

USPC **36/133**; 36/132; 36/136

(58) **Field of Classification Search**

CPC A43B 1/0009; A43B 3/00; A43B 5/02; A43B 5/025; A43B 23/00; A43B 23/0225; A43B 23/0265

USPC ..... 36/133, 114, 72 R, 128, 132, 124, 129, 36/77 R, 134, 45, 136

See application file for complete search history.

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Primary Examiner — Clinton T Ostrup
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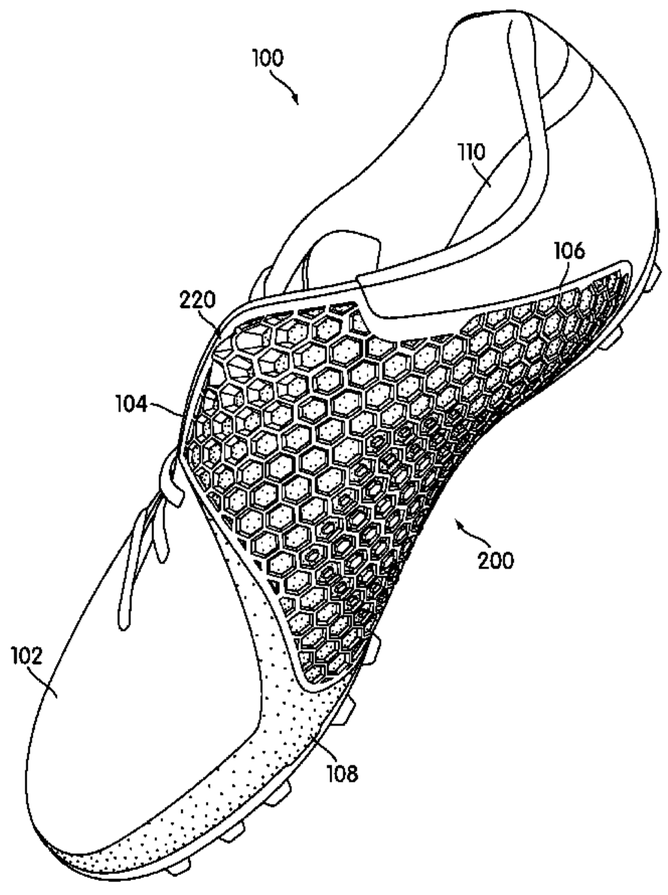
(57) **ABSTRACT**

An article of footwear with a ball contacting surface is disclosed. The ball contacting surface includes a raised peak member at the top and gripping members along a medial side. The ball contacting surface enhances the ability of a wearer to kick a ball with a low trajectory and to control the ball.

14 Claims, 15 Drawing Sheets



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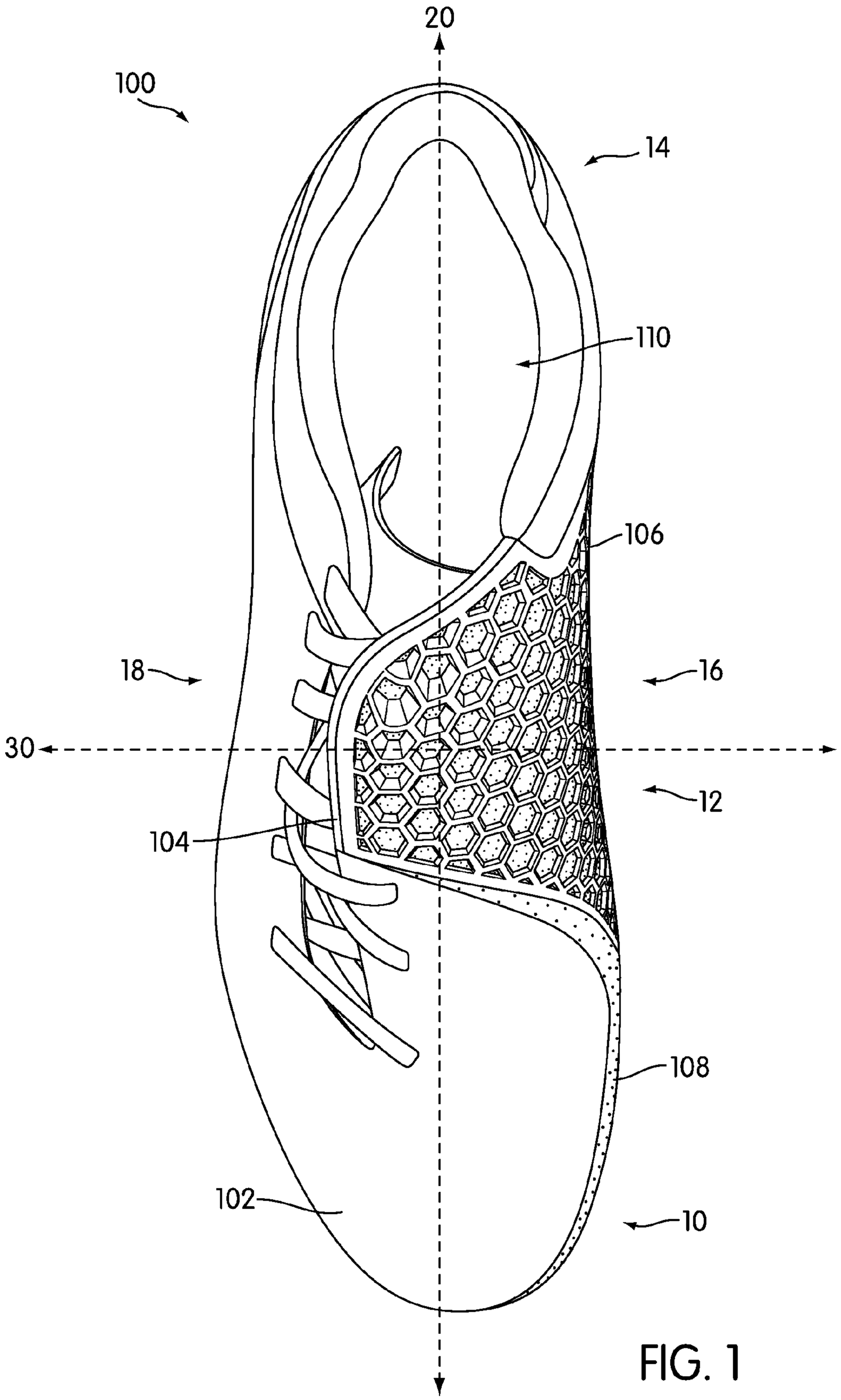

FIG. 1

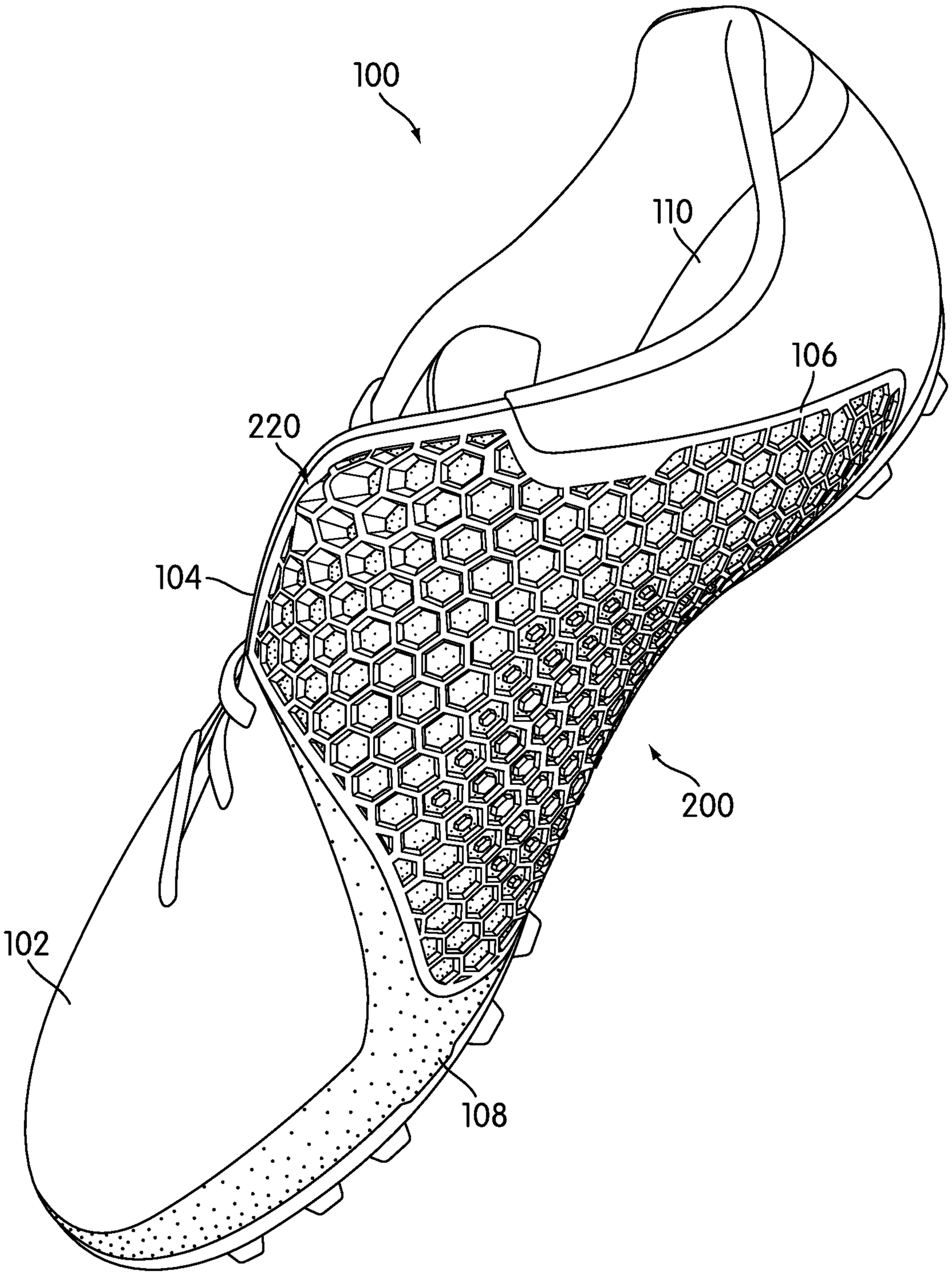

FIG. 2

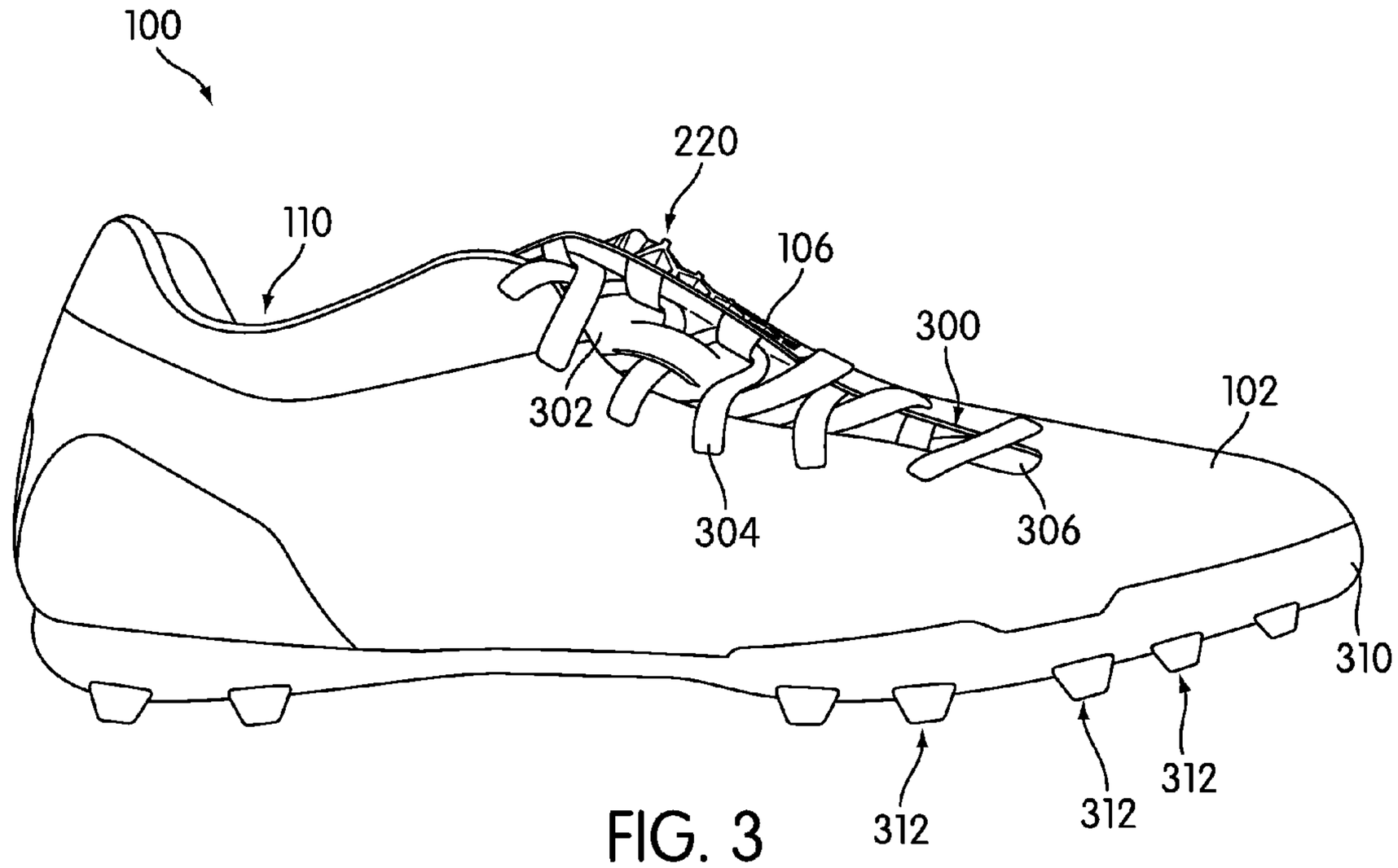
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FIG. 3

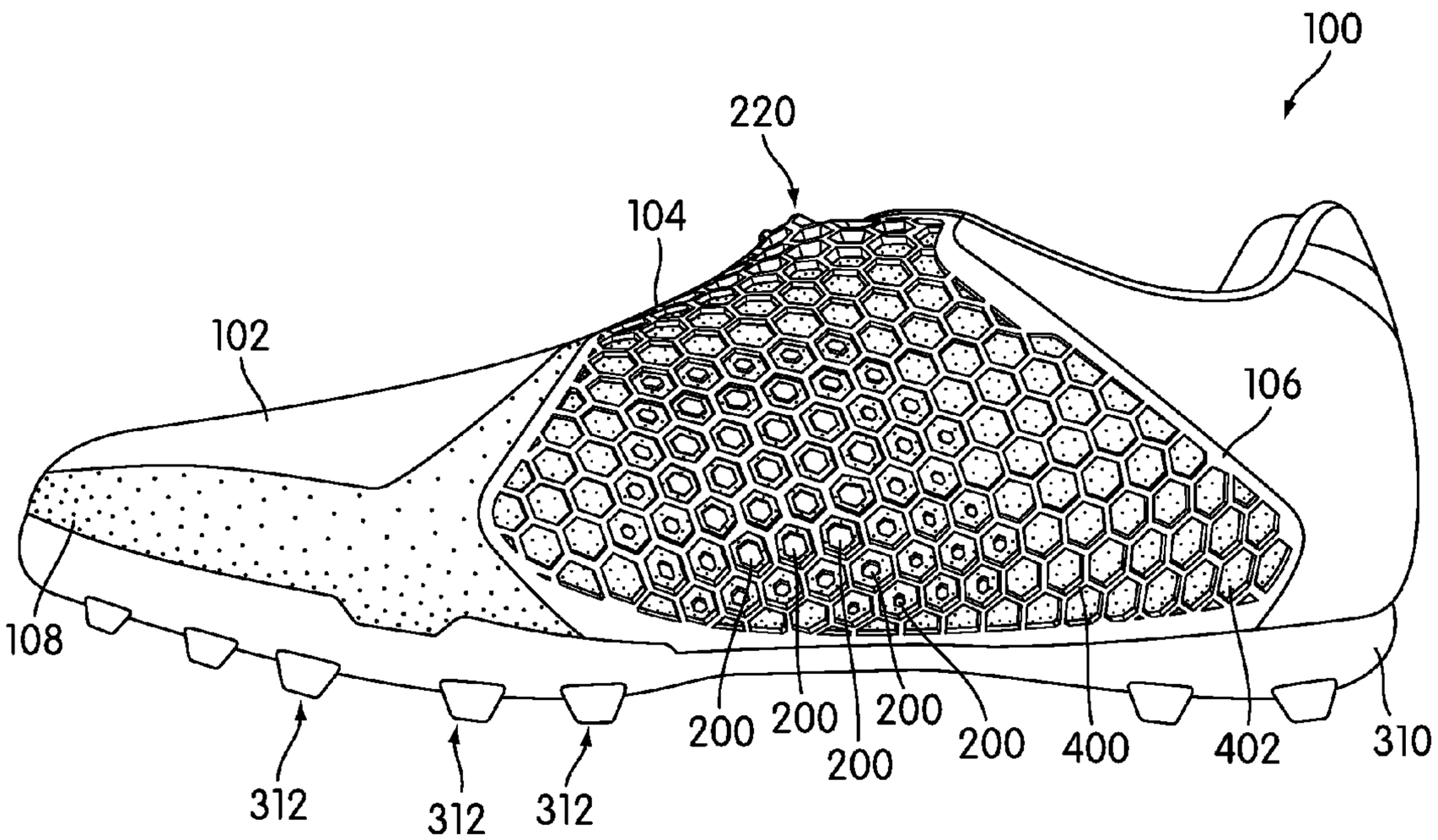
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FIG. 4

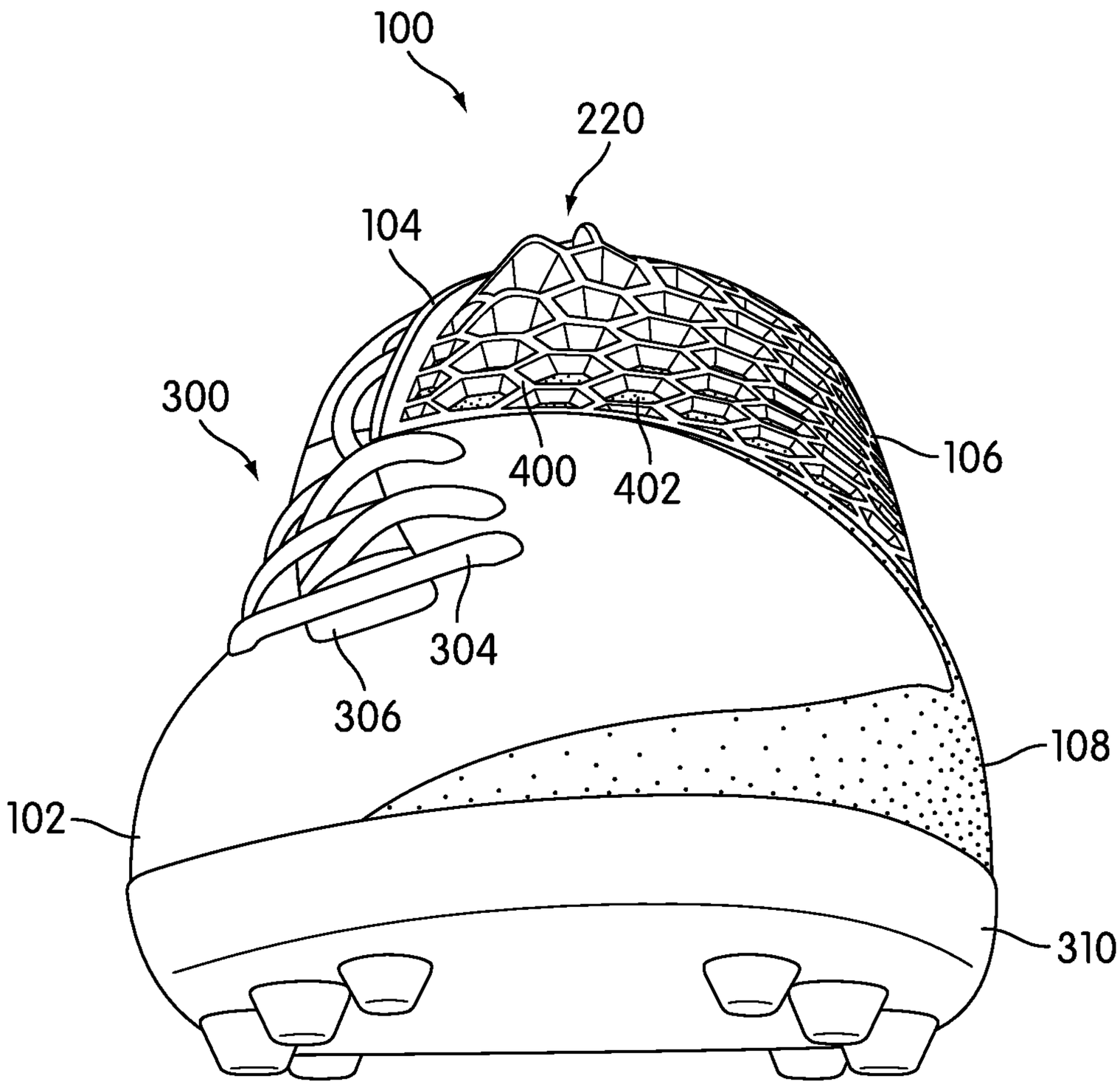


FIG. 5

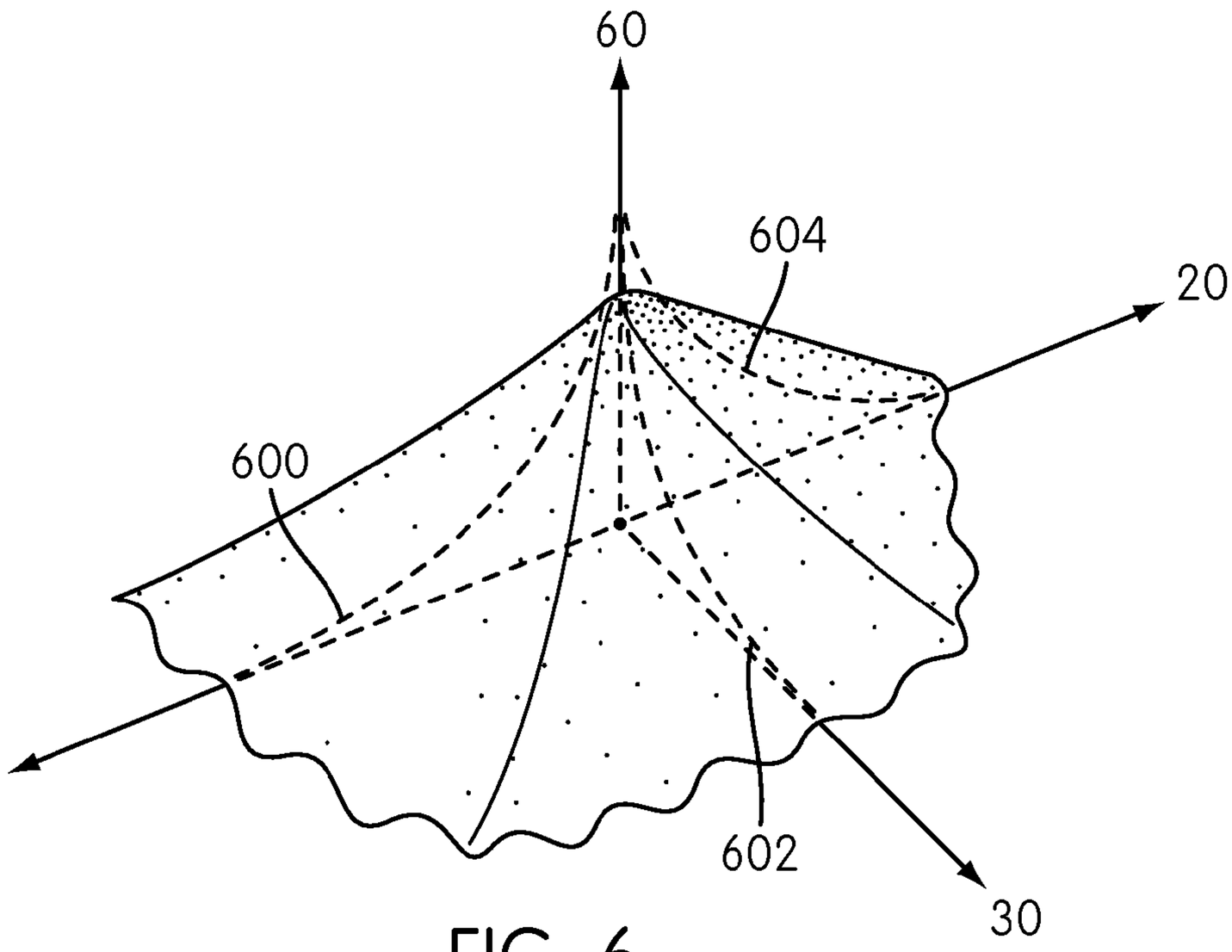


FIG. 6

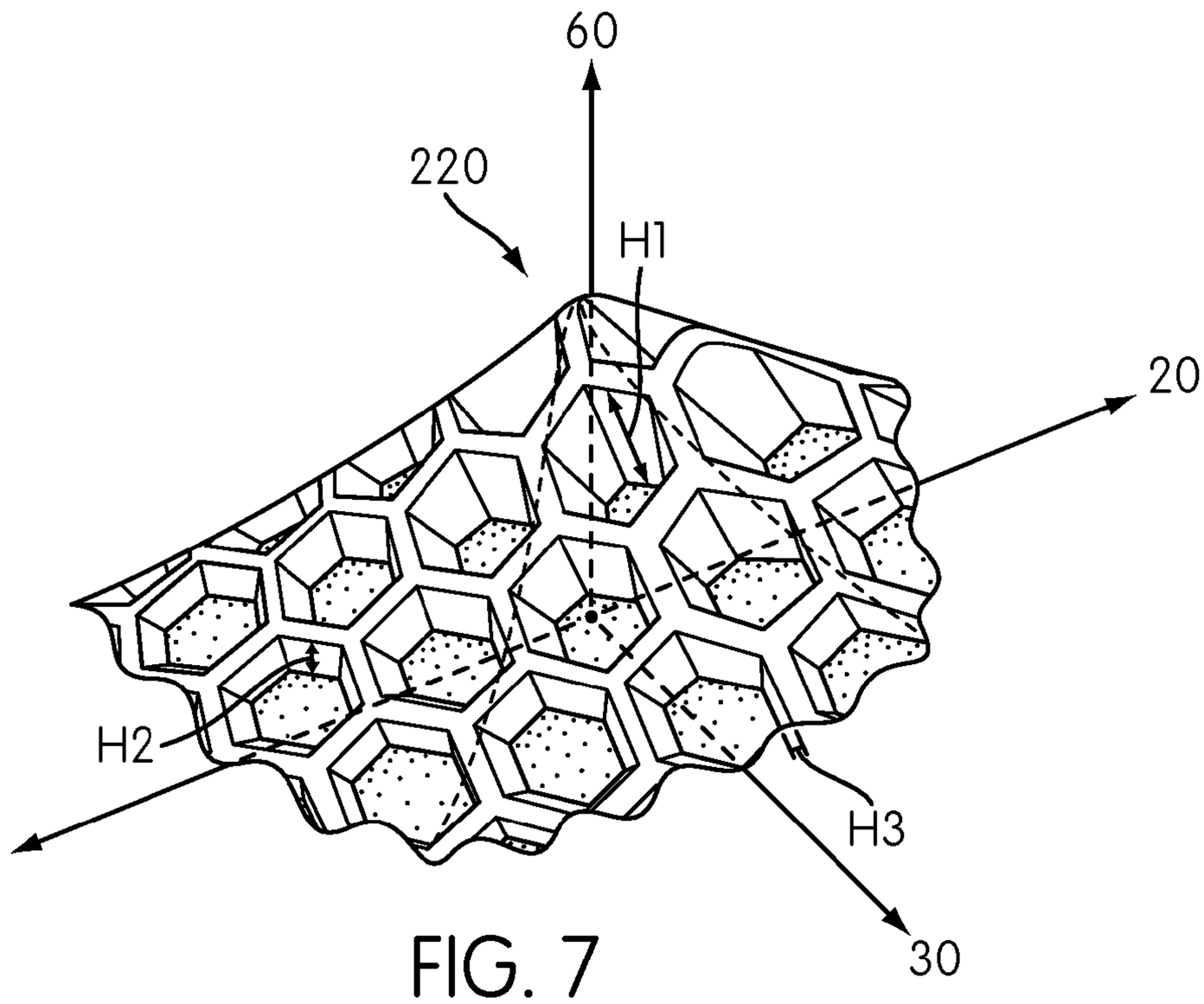


FIG. 7

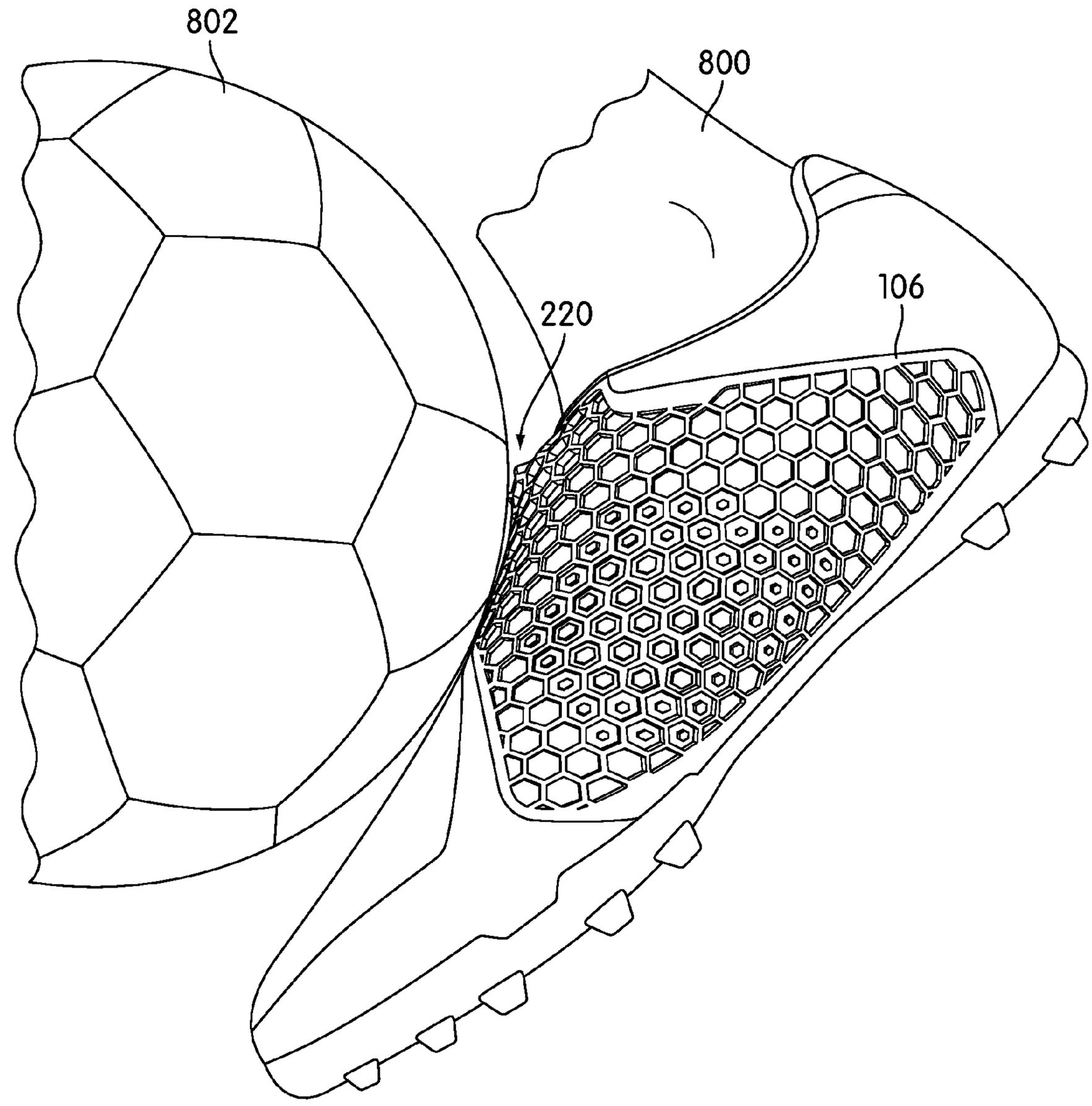
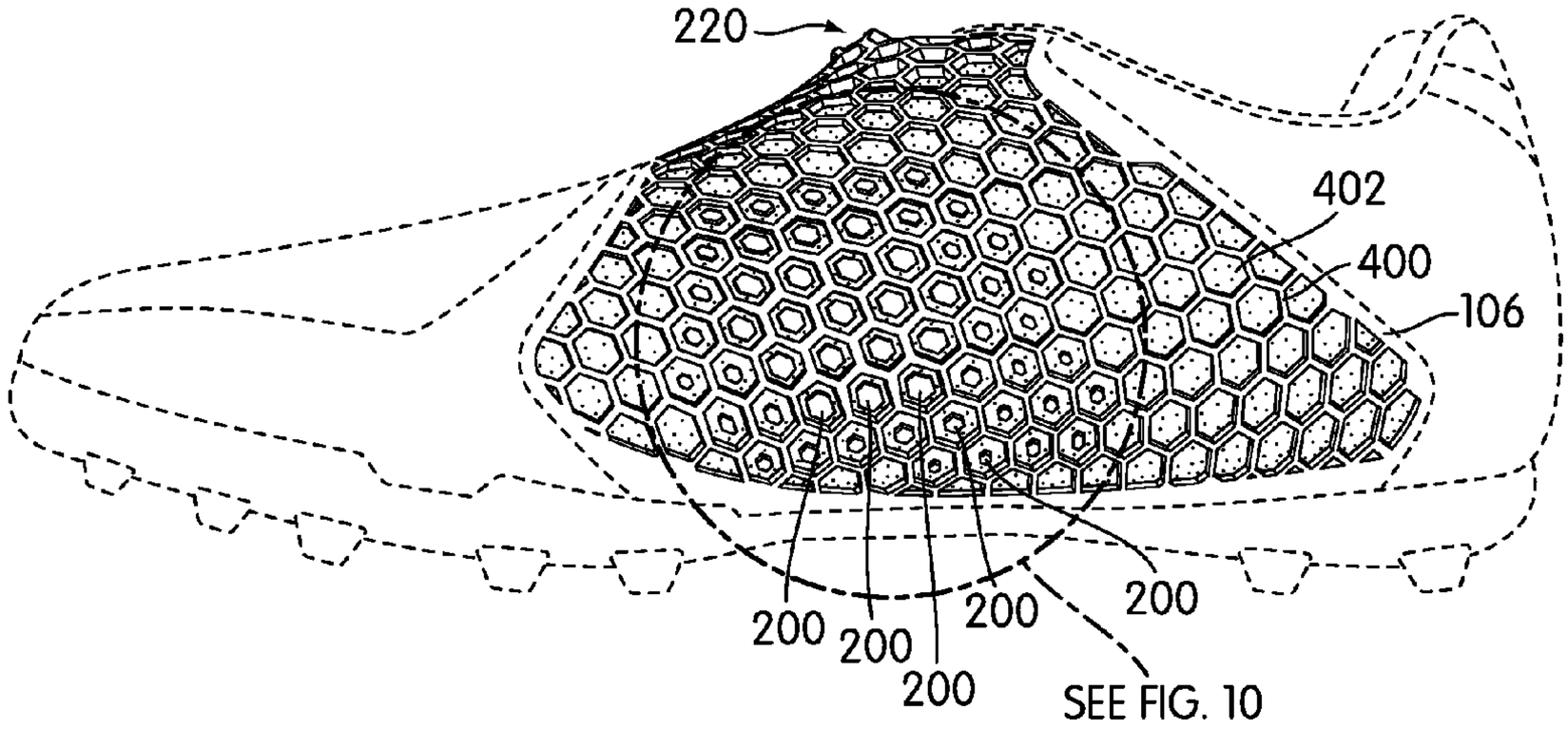


FIG. 8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SEE FIG. 10

FIG. 9

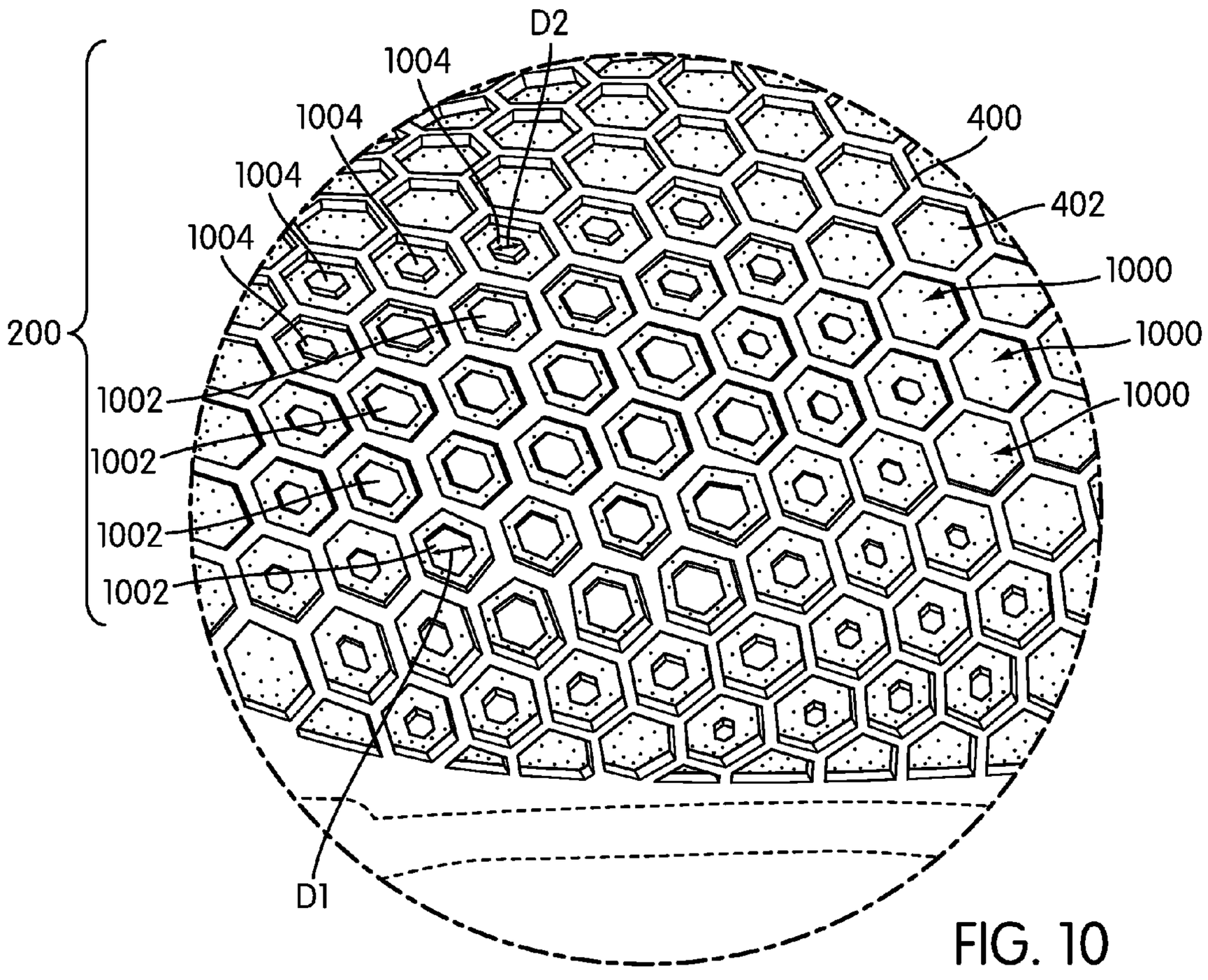
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FIG. 10

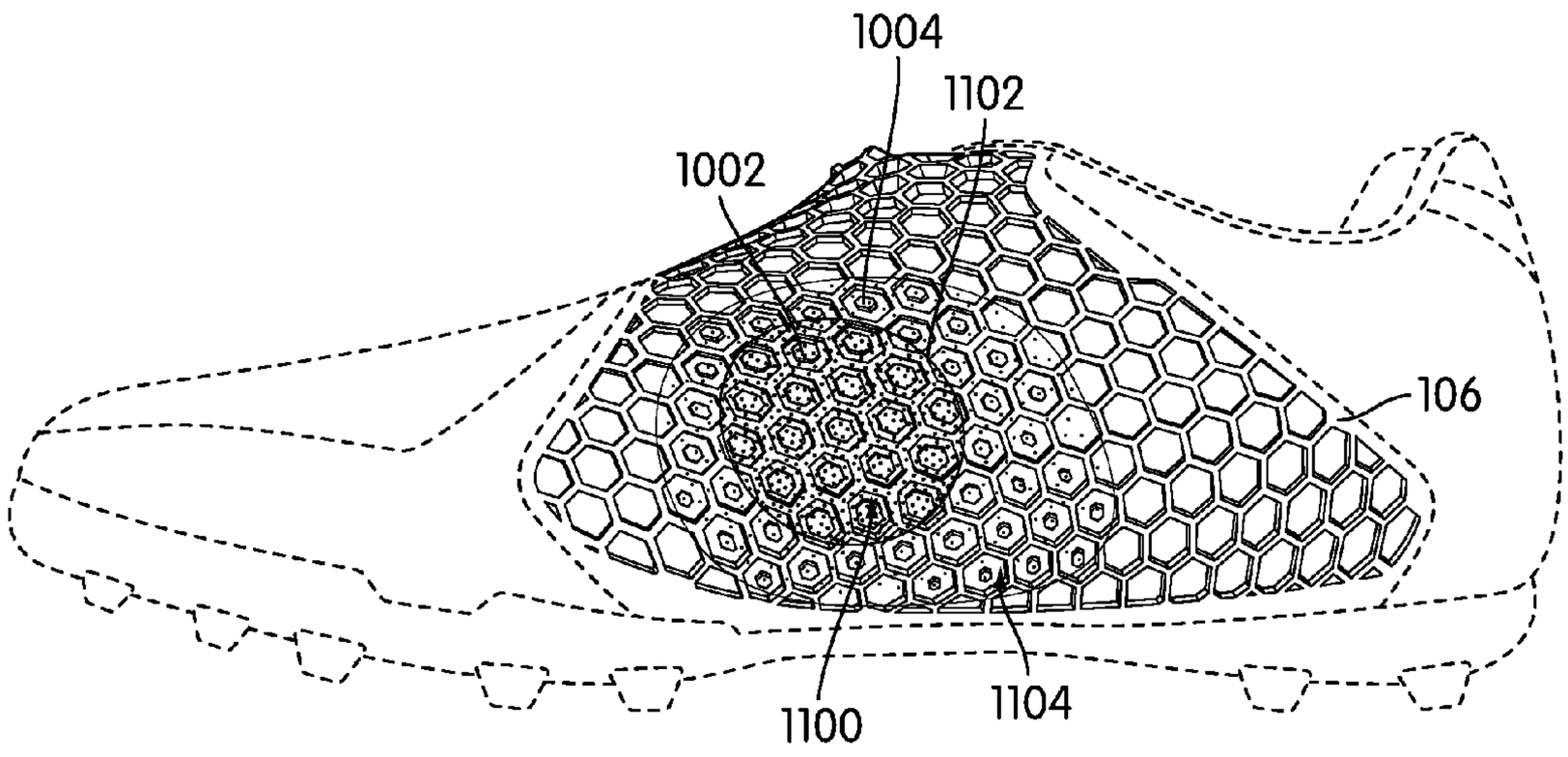

FIG. 11

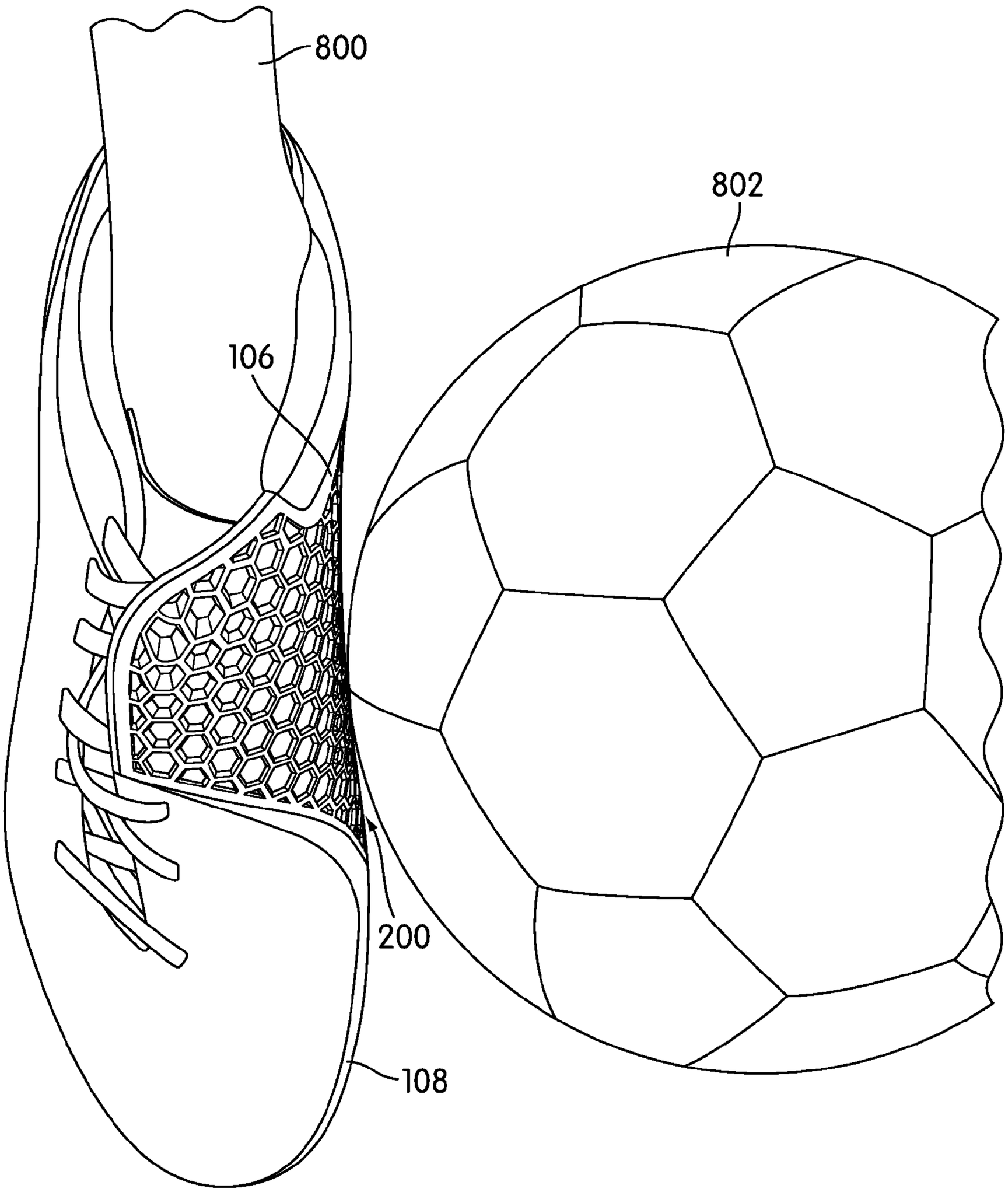

FIG. 12

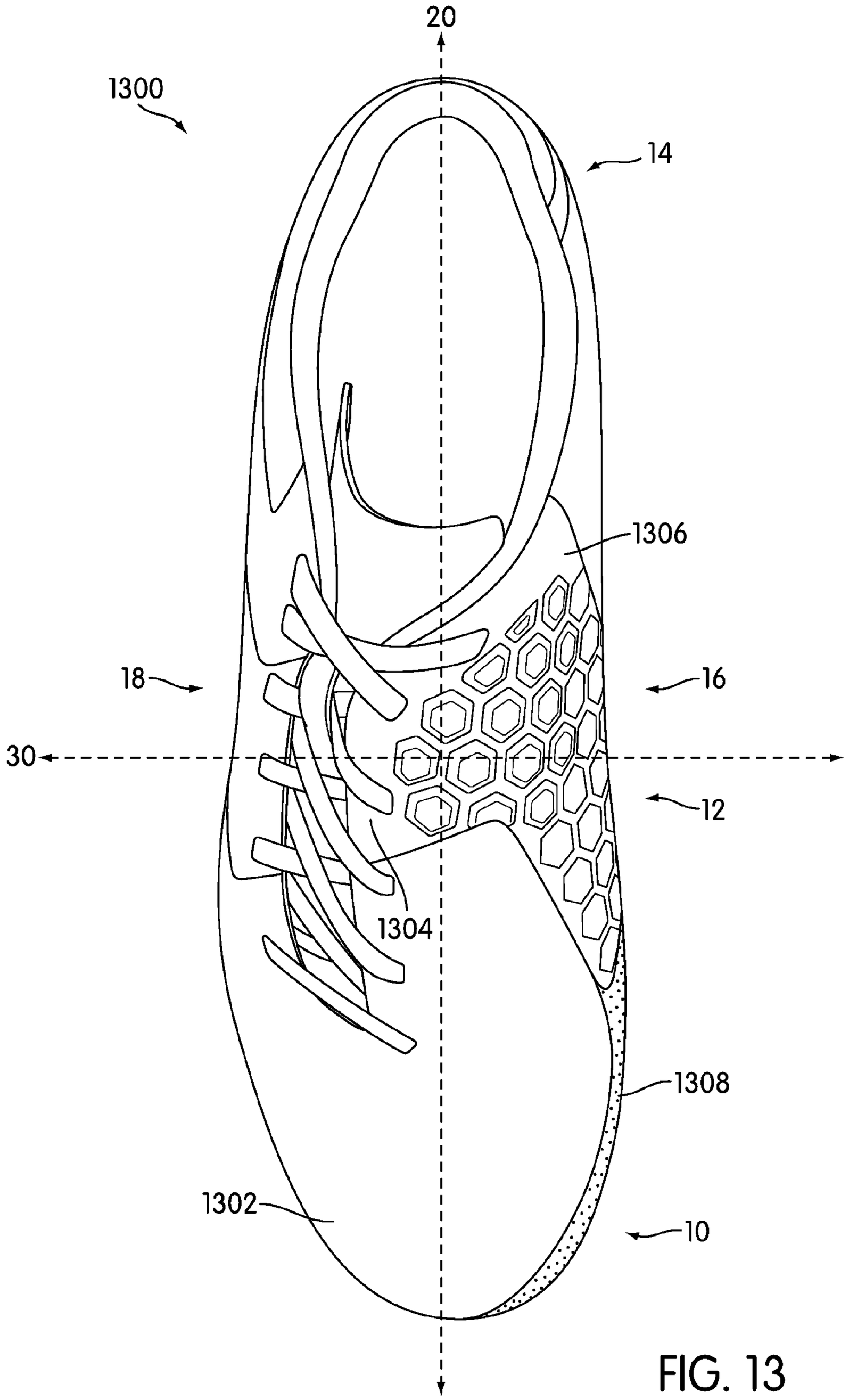

FIG. 13

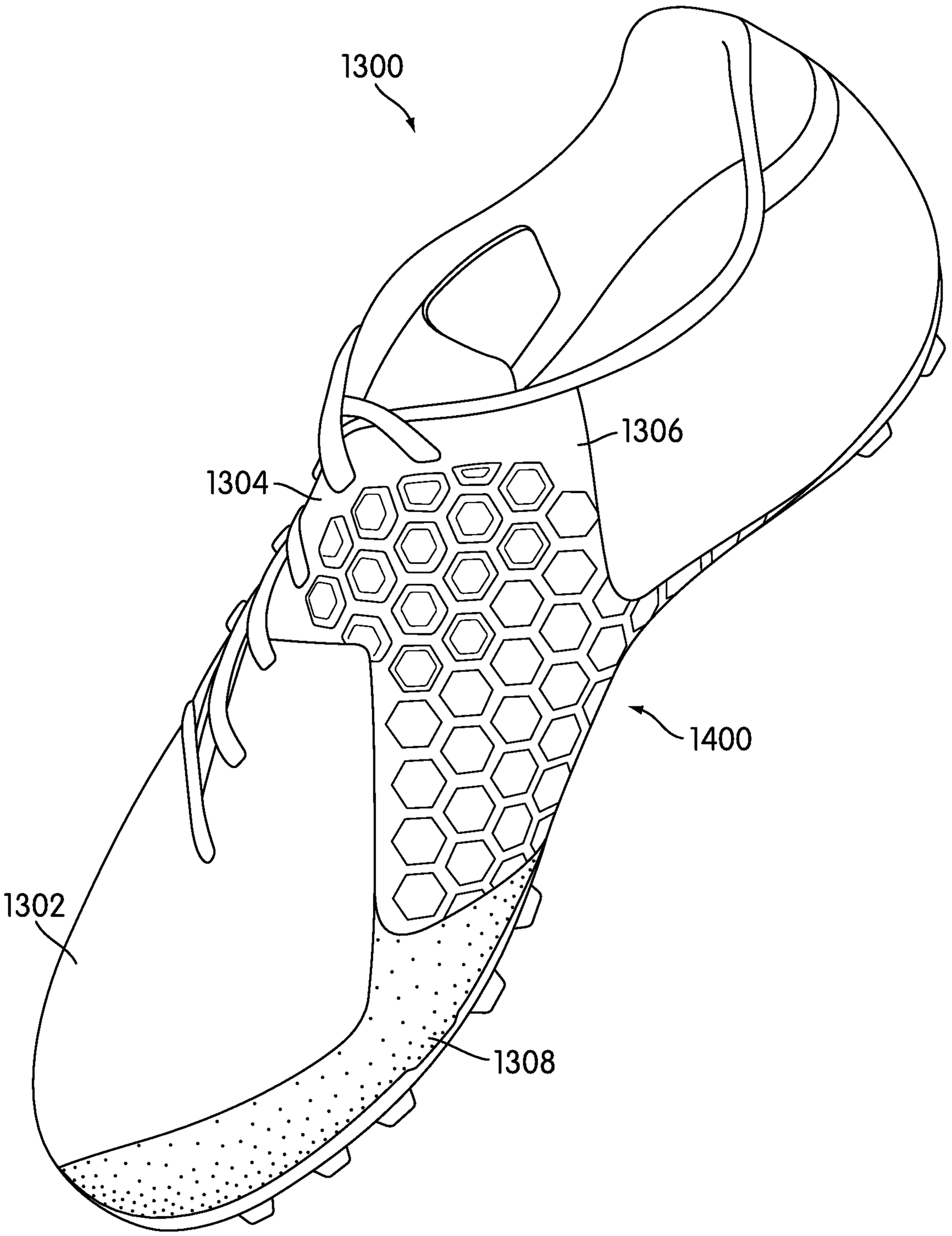

FIG. 14

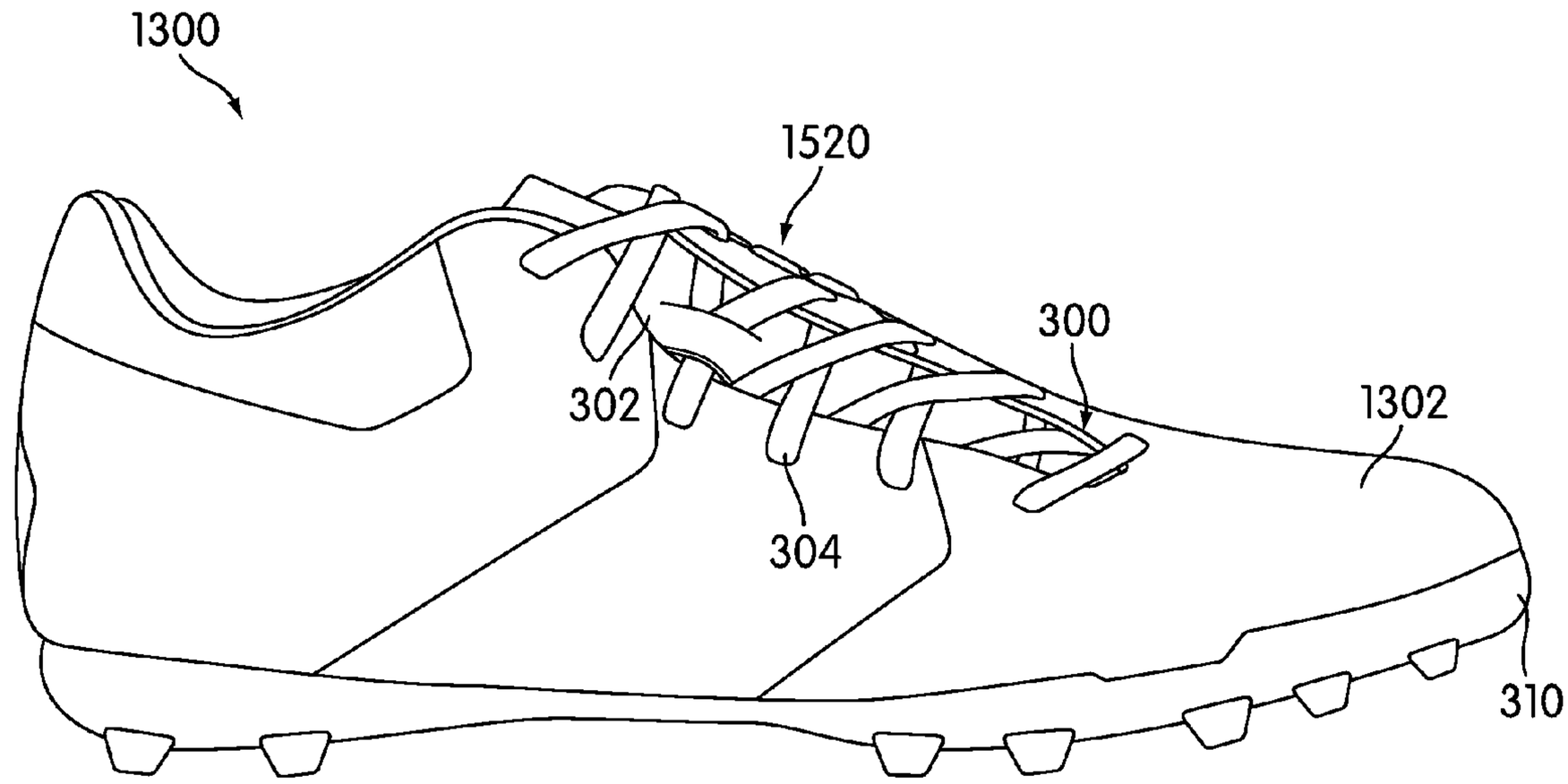
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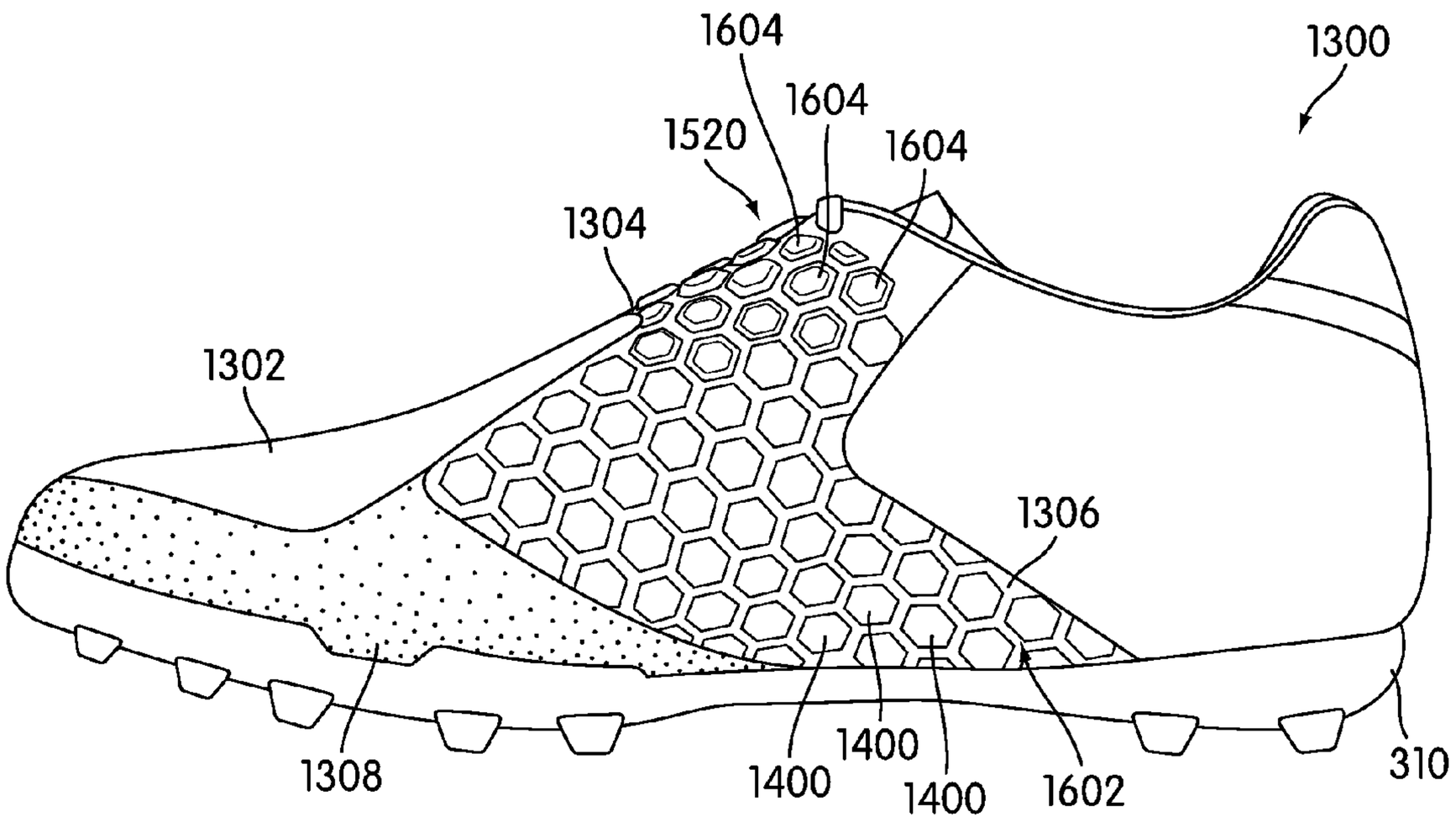
FIG. 15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1602
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FIG. 16

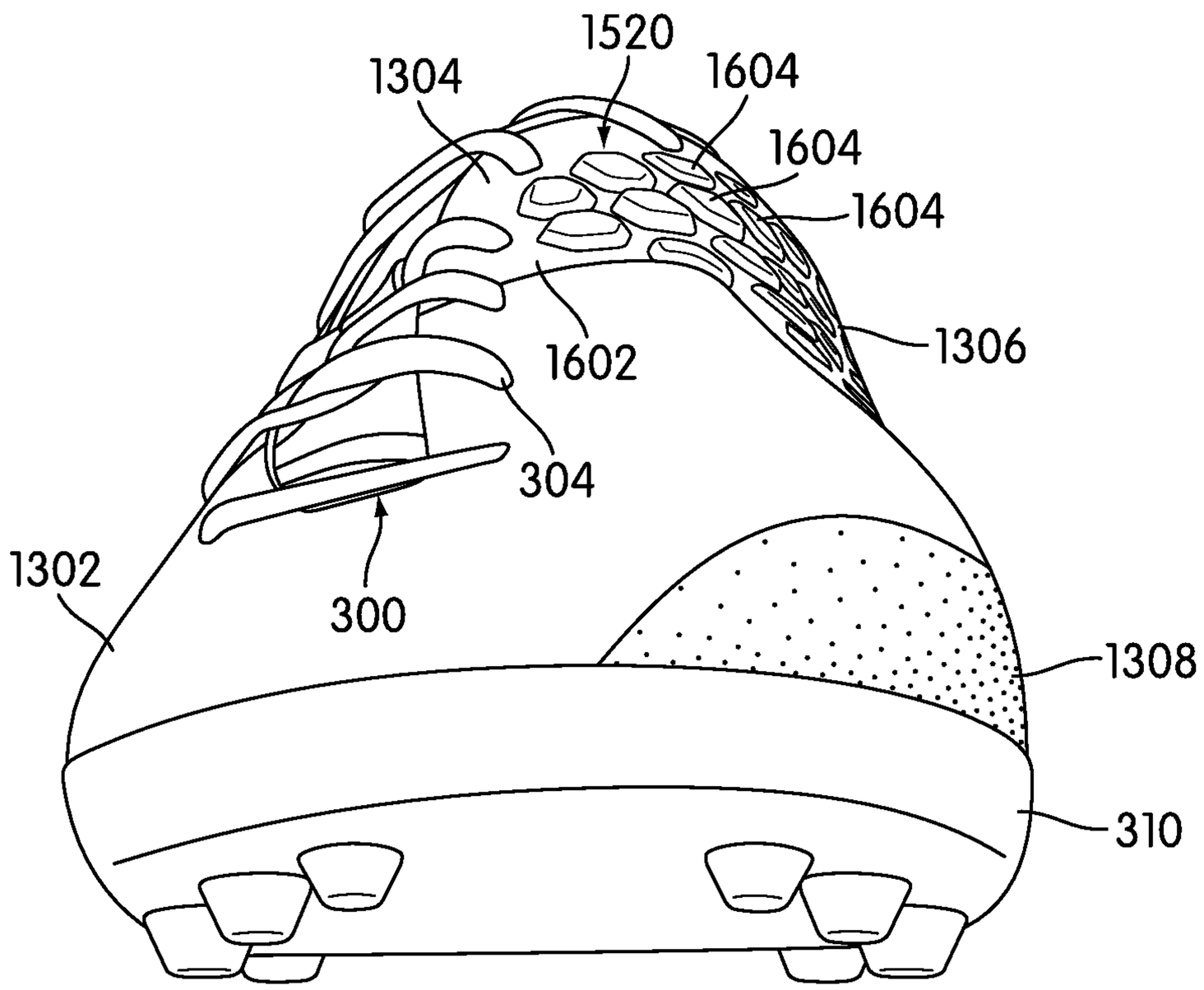

FIG. 17

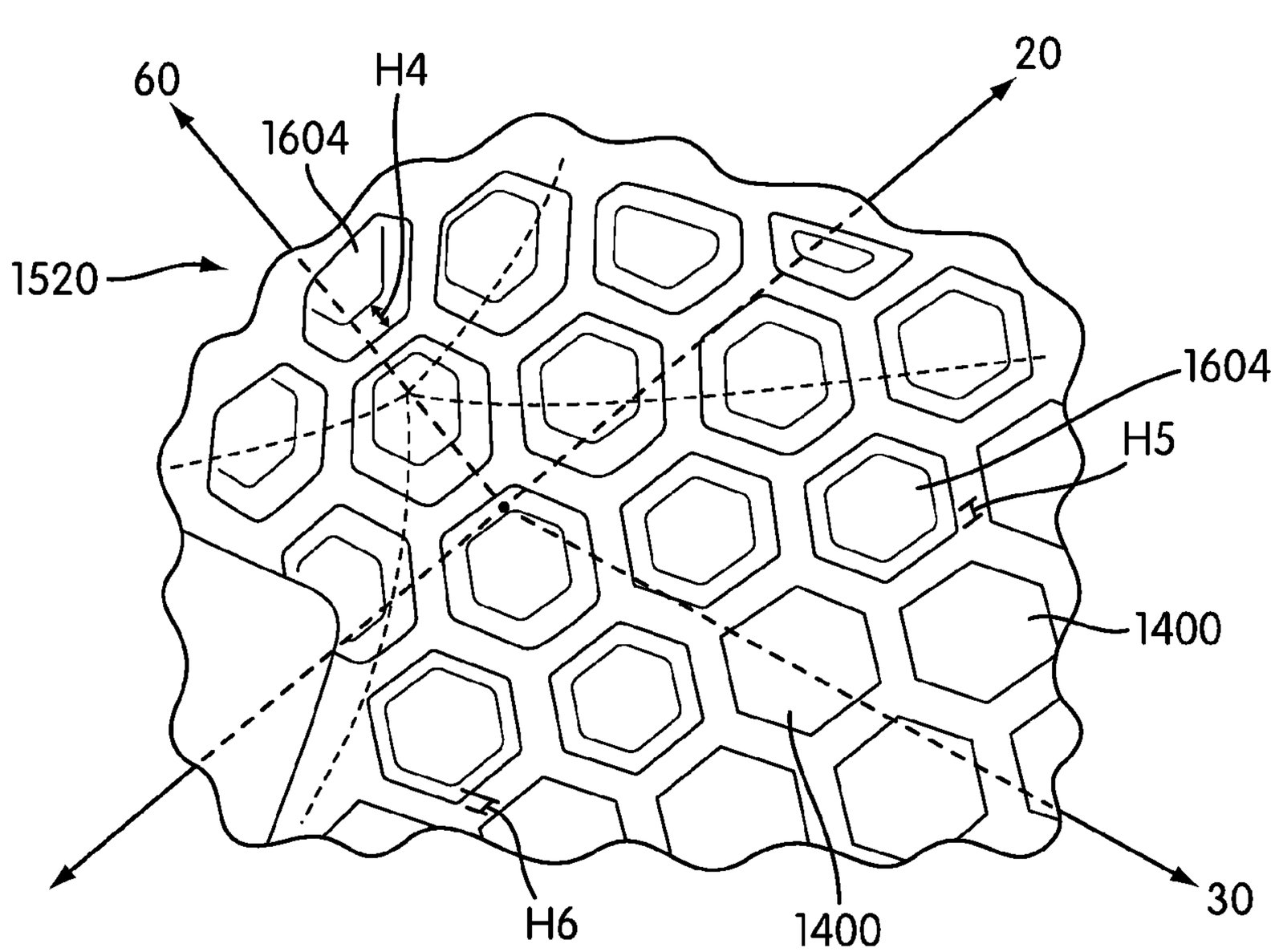

FIG. 18

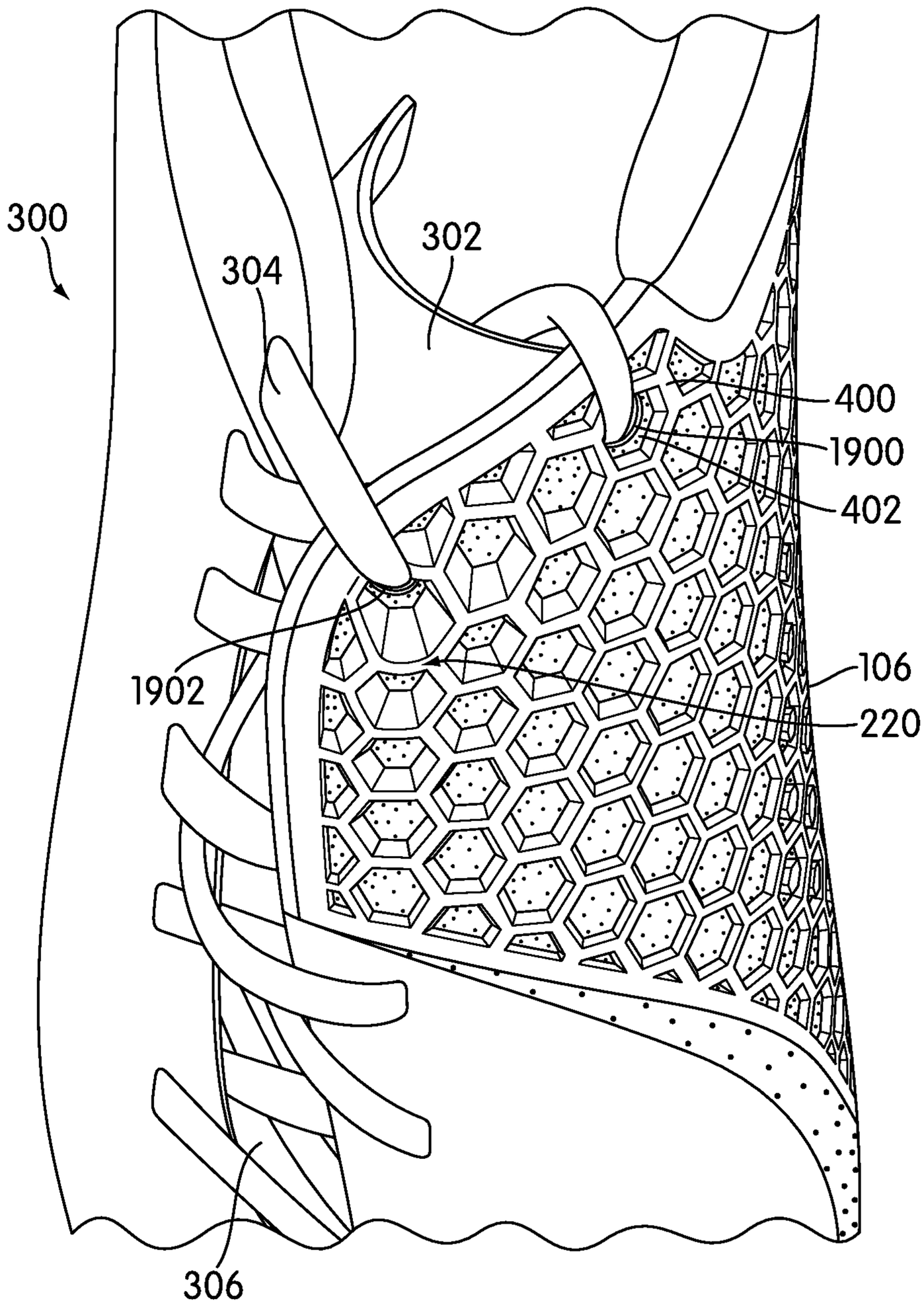

FIG. 19

ARTICLE OF FOOTWEAR WITH A BALL CONTACTING SURFACE

BACKGROUND

The present invention relates generally to an article of footwear, and more particularly to an article of footwear including a ball contacting surface.

There are many sports activities that include kicking a ball. Examples of such sports include soccer, football, rugby, Australian-rules football, and kickball. Conventional sports shoes that are available for these sports typically have an upper not very different from the uppers of other athletic shoes.

Features to optimize contact between the ball and shoe have been previously proposed. Hyde (U.S. Pat. No. 2,661,547) teaches a concave attachment to a shoe providing a pocket on the top of the foot to receive a football when it is kicked. Hannah (U.S. Pat. Nos. 4,422,249 and 4,617,746) and Gerrand (U.S. Pat. Nos. 6,421,936 and 6,637,132, and WO 2005/107508 A1) teach shoes having surfaces to optimize kicking of a ball.

Therefore, there exists a need in the art for an article of footwear that provides a ball contacting surface and allows the wearer to exhibit a degree of control over a kicked ball.

SUMMARY OF THE INVENTION

In one aspect, the invention provides an article of footwear, comprising: an upper including a forefoot region, a heel region and a midfoot region disposed between the forefoot region and the heel region; a ball contacting surface disposed on the upper of the article of footwear, the ball contacting surface including a raised peak member having a first height; wherein the raised peak member diminishes to a second height along the longitudinal axis in the direction of the forefoot region; and wherein the raised peak member diminishes to a third height along the lateral axis in the direction of a medial side of the article of footwear.

In another aspect, the invention provides an article of footwear, comprising: an upper; a ball contacting surface disposed over a portion of the upper; the ball contacting surface comprising a vamp portion including a raised peak member and a medial side portion; and wherein the ball contacting surface is formed by a substantially continuous raised overlay material extending between the medial side portion and the vamp portion.

In another aspect, the invention provides an article of footwear, comprising: an upper; a ball contacting surface disposed over a portion of a medial side of the upper; the ball contacting surface comprising a raised overlay material and a lower substrate material; the lower substrate material forming hollows between portions of the raised overlay material; and wherein the ball contacting surface includes a plurality of gripping members disposed in the hollows.

Other systems, methods, features and advantages of the invention will be, or will become apparent to one of ordinary skill in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and advantages be included within this description and this summary, be within the scope of the invention, and be protected by the following claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention can be better understood with reference to the following drawings and description. The components in the figures are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention. Moreover, in the figures, like reference numerals designate corresponding parts throughout the different views.

FIG. **1** is a top view of an exemplary embodiment of an article of footwear including a ball contacting surface;

FIG. **2** is an isometric view of an exemplary embodiment of an article of footwear including a ball contacting surface;

FIG. **3** is a lateral side view of an exemplary embodiment of an article of footwear including a ball contacting surface;

FIG. **4** is a medial side view of an exemplary embodiment of an article of footwear including a ball contacting surface;

FIG. **5** is a front view of an exemplary embodiment of an article of footwear including a ball contacting surface with a raised peak member;

FIG. **6** is a representative view of the contours of an exemplary embodiment of a raised peak member of a ball contacting surface;

FIG. **7** is a view of an exemplary embodiment of a raised peak of a ball contacting surface;

FIG. **8** is a side view of an exemplary embodiment of a ball contacting surface in contact with a ball;

FIG. **9** is a side view of an exemplary embodiment of a medial side of a ball contacting surface;

FIG. **10** is a close up view of an exemplary embodiment of a medial side of a ball contacting surface including gripping members;

FIG. **11** is a plan view of an arrangement of gripping members on a medial side of a ball contacting surface;

FIG. **12** is a top view of an exemplary embodiment of a ball contacting surface in contact with a ball;

FIG. **13** is a top view of an alternate exemplary embodiment of an article of footwear including a ball contacting surface;

FIG. **14** is an isometric view of an alternate exemplary embodiment of an article of footwear with a ball contacting surface;

FIG. **15** is a lateral side view of an alternate exemplary embodiment of an article of footwear including a ball contacting surface;

FIG. **16** is a medial side view of an alternate exemplary embodiment of an article of footwear including a ball contacting surface;

FIG. **17** is a front view of an alternate exemplary embodiment of an article of footwear including a ball contacting surface with a raised peak member;

FIG. **18** is a view of an alternate exemplary embodiment of a raised peak member of a ball contacting surface; and

FIG. **19** is a top view of an alternate embodiment of a shoe fastening system for an article of footwear including a ball contacting surface.

DETAILED DESCRIPTION OF THE EMBODIMENTS

FIGS. **1** through **5** illustrate views of an exemplary embodiment of article of footwear **100**. For clarity, the following detailed description discusses an embodiment, in the form of a shoe for indoor soccer, but it should be noted that the present invention could take the form of any article of footwear including, but not limited to, soccer shoes, football shoes, rugby shoes, as well as other kinds of shoes.

Referring to FIGS. **1** through **5**, for purposes of reference, article of footwear **100**, also referred to as simply article **100**, may be divided into forefoot region **10**, midfoot region **12** and heel region **14**. Forefoot region **10** may be generally associated with the toes and joints connecting the metatarsals with the phalanges. Midfoot region **12** may be generally associated

with the arch of a foot. Likewise, heel region **14** may be generally associated with the heel of a foot, including the calcaneus bone. In addition, article **100** may include medial side **16** and lateral side **18**. In particular, medial side **16** and lateral side **18** may be opposing sides of article **100**. Furthermore, both medial side **16** and lateral side **18** may extend through forefoot region **10**, midfoot region **12** and heel region **14**.

It will be understood that forefoot region **10**, midfoot region **12** and heel region **14** are only intended for purposes of description and are not intended to demarcate precise regions of article **100**. Likewise, medial side **16** and lateral side **18** are intended to represent generally two sides of an article, rather than precisely demarcating article **100** into two halves. In addition, forefoot region **10**, midfoot region **12** and heel region **14**, as well as medial side **16** and lateral side **18**, can also be applied to individual components of an article, such as a sole structure and/or an upper.

For consistency and convenience, directional adjectives are employed throughout this detailed description corresponding to the illustrated embodiments. The term "longitudinal" as used throughout this detailed description and in the claims refers to a direction extending a length of an article. In some cases, the longitudinal direction may extend from a forefoot region to a heel region of the article. Also, the term "lateral" as used throughout this detailed description and in the claims refers to a direction extending a width of an article. In other words, the lateral direction may extend between a medial side and a lateral side of an article. It will be understood that each of these directional adjectives may be applied to individual components of an article, such as an upper and/or a sole structure.

Referring to FIG. **1**, article of footwear **100** may include a longitudinal axis **20** extending the length of article of footwear **100** from forefoot region **10** to heel region **14**. Article of footwear **100** also may include a lateral axis **30** extending the width of article of footwear **100** between medial side **16** and lateral side **18**.

Article of footwear **100** may include upper **102**. Generally, upper **102** may be any type of upper. In particular, upper **102** may have any design, shape, size and/or color. For example, in embodiments where article **100** is a basketball shoe, upper **102** could be a high top upper that is shaped to provide high support on an ankle. In embodiments where article **100** is a running shoe, upper **102** could be a low top upper. Generally, upper **102** may be made from any suitable material, including but not limited to, for example, nylon, natural leather, synthetic leather, natural rubber, or synthetic rubber. In some cases, upper **102** can be made of any suitable knitted, woven or non-woven material.

In some embodiments, article **100** may include vamp portion **104**. The term "vamp portion" as used throughout this detailed description and in the claims generally refers to a portion of upper **102** extending through midfoot region **12**. Vamp portion **104** may extend to entry hole **110** of upper **102**. In some embodiments, vamp portion **104** may include a ball contacting surface **106**. In some embodiments, ball contacting surface **106** may be used to enhance the ability to contact and control the ball when kicked. Generally, ball contacting surface **106** may be associated with any portion of upper **102**. In some cases, ball contacting surface **106** may be associated with midfoot region **12** of upper **102**. In some embodiments, ball contacting surface **106** may extend from medial side **16** to the top of upper **102**. In an exemplary embodiment, ball contacting surface **106** extends substantially continuously from medial side **16** to the top of upper **102**. Furthermore, in some cases, ball contacting surface **106** may be disposed on a portion of upper **102** directly above the instep, or top, of a foot. In other cases, ball contacting surface **106** may extend into portions of forefoot region **10** and/or heel region **14**.

Generally, any materials may be used for ball contacting surface **106**. Examples of different materials include, but are not limited to, roughened leathers, rubbers, silastics, or any synthetic or natural elastomeric material such as styrene-butadiene, or polyurethane. In some embodiments, ball contacting surface **106** may be made from a combination of one or more of such materials.

In some cases, article of footwear **100** also may include textured surface **108**. In this embodiment, textured surface **108** is generally located in forefoot region **10** on medial side **16** of article **100**. In other embodiments, textured surface **108** may extend into a portion of midfoot region **12**. In some embodiments, textured surface **108** may further enhance ball control. In an exemplary embodiment, textured surface **108** may increase the grip of upper **102**.

Referring now to FIG. **2**, article of footwear **100** may include provisions for lowering the trajectory of a kicked ball. In some embodiments, article of footwear **100** may provide a portion of ball contacting surface **106** that is substantially inclined with respect to an outer portion of upper **102** where a ball may contact article **100** during various types of kicks. In one exemplary embodiment, article **100** can include a raised peak member **220** that provides a relatively steep angle for contact with a ball. This configuration may be useful in indoor soccer where the top of the goal is lower than the top of the goal in outdoor soccer, requiring lower trajectories for kicks. In some embodiments, raised peak member **220** may be wedge shaped. In other embodiments, raised peak member **220** may be other shapes, including, but not limited to: pyramidal, trapezoidal, conical, and other geometric and non-geometric shapes.

In some embodiments, article of footwear **100** may provide a portion of ball contacting surface **106** that includes provisions for enhancing the ability to contact and control the ball when kicked. In some cases, ball contacting surface **106** may include a plurality of gripping members **200**. Gripping members **200** may be any member disposed on ball contacting surface **106** that are configured to come in contact with a ball during various types of kicks. In an exemplary embodiment, gripping members **200** may include raised portions of ball contacting surface **106**. As shown in FIG. **2**, in this embodiment, gripping members **200** may have a similar height as ball contactinq surface **106** so that ball contacting surface **106** and gripping members **200** are substantially flush with each other. In some embodiments, gripping members **200** may be designed to make initial contact with a ball before ball contacting surface **106**.

Generally, gripping members **200** may be associated with any portion of ball contacting surface **106** on upper **102**. In some embodiments, gripping members **200** may be arranged on medial side **16** of article **100**. In some embodiments, gripping members **200** additionally may be associated with a portion of midfoot region **12** of article **100**. In an exemplary embodiment, gripping members **200** may be disposed on a portion of ball contacting surface **106** associated with the instep of a foot on medial side **16**. In other embodiments, gripping members **200** may be associated with one or more portions of forefoot region **10** and/or heel region **14**. In further embodiments, gripping members **200** may be arranged on lateral side **18** and/or medial side **16** in any of forefoot region **10**, midfoot region **12**, and/or heel region **14**.

FIG. **3** illustrates lateral side **18** of an exemplary embodiment of article of footwear **100** including ball contacting surface **106**. In this embodiment, raised peak member **220** is

visible in profile rising above the surface of upper **102**. In this embodiment, lateral side **18** of upper **102** does not include ball contacting surface **106**. In other embodiments, ball contacting surface **106** may extend to lateral side **18** of upper **102**.

In some embodiments, article of footwear **100** may include shoe fastening system **300**. Shoe fastening system **300** may be used to tighten upper **102** to a foot. Examples of shoe fastening systems include, but are not limited to, laces, buckles, hook and loop fasteners (such as Velcro®) as well as any other types of fastening systems. In one embodiment, shoe fastening system **300** includes tongue **302** and lace **304**. Additionally, shoe fastening system **300** may include tongue opening **306**. Tongue opening **306** may be a gap or opening in upper **102** that extends from entry hole **110** into forefoot region **10**. In this embodiment, lace **304** may be configured to change the size of tongue opening **306**, which may further adjust the size of upper **102**. In some embodiments, tongue opening **306** may be spaced from the center of article **100**. In one exemplary embodiment, tongue opening **306** may be spaced offset to lateral side **18** of article **100**. Using this laterally spaced lacing configuration, shoe fastening system **300** is designed to avoid interference with a ball that may be kicked using vamp portion **104** of upper **102**.

Article of footwear **100** may include sole structure **310**. In some embodiments, sole structure **310** may be configured to provide traction for article **100**. In addition to providing traction, sole structure **310** may attenuate ground reaction forces when compressed between the foot and the ground during walking, running or other ambulatory activities. The configuration of sole structure **310** may vary significantly in different embodiments to include a variety of conventional or non-conventional structures. In some cases, the configuration of sole structure **310** can be configured according to one or more types of ground surfaces on which sole structure **310** may be used. Examples of ground surfaces include, but are not limited to: natural turf, synthetic turf, dirt, as well as other surfaces.

Sole structure **310** is secured to upper **102** and extends between the foot and the ground when article **100** is worn. In different embodiments, sole structure **310** may include different components. For example, sole structure **310** may include an outsole, a midsole, and/or an insole. In some cases, one or more of these components may be optional. Sole structure **310** may be made from any suitable material, including but not limited to elastomers, siloxanes, natural rubber, other synthetic rubbers, aluminum, steel, natural leather, synthetic leather, or plastics.

In some embodiments, sole structure **310** may include cleat members **312** that can enhance traction with the ground. In one embodiment, sole structure **310** includes cleat members **310** that are incorporated into sole structure **310**. However, other embodiments may include removable cleat members. In one embodiment, sole structure **310** may use one or more features described in U.S. Pat. No. 6,973,746 to Auger et al, the entirety of which is incorporated by reference. In one embodiment, the cleat assembly described in U.S. Pat. No. 6,973,746 is used in combination with article **100**.

Referring now to FIG. **4**, medial side **16** of article **100** including ball contacting surface **106** is illustrated. In some embodiments, ball contacting surface **106** may be formed by an overlay **400** disposed over a substrate **402**. In one exemplary embodiment, overlay **400** may be formed by a raised material disposed over substrate **402**. In some embodiments, overlay **400** may be made of a rigid material. In different embodiments, overlay **400** may be made of any suitable material, including, but not limited to: polyurethane, other elastomers, siloxanes, natural rubber, other synthetic rubbers, natural leather, synthetic leather, or plastics. In some embodiments, substrate **402** may be made of a tactile material that provides grip to a ball. In other embodiments, substrate **402** may be made of any suitable material, including, but not limited to similar materials used to make upper **102** as described above.

In some embodiments, overlay **400** may be arranged over ball contacting surface **106** in a geometric pattern. In one exemplary embodiment, overlay **400** is arranged in a hexagonal or honeycomb pattern. With this arrangement, article **100** may exhibit consistent ball control properties across the majority of ball contacting surface **106**. In other embodiments, overlay **400** may be arranged over ball contacting surface **106** in any geometric-shaped pattern, regular pattern, or irregular pattern. In some embodiments, gripping members **200** may be disposed on substrate **402** between portions of overlay **400**.

Referring now to FIG. **5**, in some embodiments, overlay **400** may be varied in thickness. In different embodiments, overlay **400** may be varied in thickness at varying portions of ball contacting surface **106**. In the exemplary embodiment of FIG. **5**, overlay **400** forms raised peak member **220** near the top of vamp portion **104**. In this embodiment, raised peak member **220** is formed by a graduated increase in thickness of overlay **400**. In this embodiment, shoe fastening system **300** is spaced offset to lateral side **18** of article **100** to avoid interference with a ball that may be hit by raised peak member **220**.

FIGS. **6** and **7** illustrate a close up view of the geometry of ball contacting surface **106** including raised peak member **220**. In some embodiments, ball contacting surface **106** may be curved along longitudinal axis **20** and/or lateral axis **30**. In other words, the thickness of overlay **400** of ball contacting surface **106** may vary in a nonlinear manner in the longitudinal and/or lateral directions. In some cases, vamp portion **104** of ball contacting surface **106** may have a substantially concave shape along longitudinal axis **20** and/or lateral axis **30** in a manner that corresponds to the natural curvature of a ball. In other cases, one or more portions of ball contacting surface may have a substantially convex shape along longitudinal axis **20** and/or lateral axis **30**.

In different embodiments, the geometry of raised peak member **220** can vary. In some cases, raised peak member **220** has a wedge-like shape that provides an angled surface for contacting a ball during a kick. In particular, FIG. **6** illustrates a representative view of the contours of an exemplary embodiment of raised peak member **220**. In this embodiment, raised peak member **220** may be contoured in at least two directions.

As illustrated in FIG. **6**, a first contoured surface **600** extends from a height on vertical axis **60** generally along longitudinal axis **20** in a direction towards forefoot region **10**. Similarly, a second contoured surface **602** extends from a height on vertical axis **60** generally along lateral axis **30** in a direction towards medial side **16**. In some embodiments, raised peak member also may include a third contoured surface **604** that extends from a height on vertical axis **60** generally along longitudinal axis **20** in a direction towards heel region **14**. It should be understood that first contoured surface **600**, second contoured surface **602**, and/or third contoured surface **604** may extend along any portion of longitudinal axis **20**, lateral axis **30**, and/or vertical axis **60**, or any combination thereof.

Referring now to FIG. **7**, raised peak member **220** of ball contacting surface **106** is depicted conforming to the geometry of contours illustrated in FIG. **6**. In some embodiments, raised peak member **220** may be formed by varying the thick-

ness of overlay **400** of ball contacting surface **106**. In this embodiment, the thickness of overlay **400** may vary from a first height H**1** at the apex of raised peak member **220** to a second height H**2** of ball contacting surface **106** along longitudinal axis **20** in a direction towards forefoot region **10**. Similarly, the thickness of overlay **400** may vary from first height H**1** at the apex of raised peak member **220** to a third height H**3** of ball contacting surface **106** along lateral axis **30** in a direction towards medial side **16**. Moreover, first height H**1** may be substantially greater than second height H**2** and/or third height H**3**. In different embodiments, overlay **400** also may vary in height from first height H**1** along longitudinal axis **20** in a direction towards heel region **14** and/or along lateral axis **30** in a direction towards lateral side **18**.

In an exemplary embodiment, first height H**1** of raised peak member **220** diminishes in height to second height H**2** to form first contoured surface **600** along longitudinal axis **20** in a direction towards forefoot region **10**. Similarly, first height H**1** of raised peak member **220** diminishes in height to third height H**3** to form second contoured surface **602** along lateral axis **30** in a direction towards medial side **16**. In other embodiments, raised peak member **220** also may diminish in height along longitudinal axis **20** in a direction towards heel region **14** to form third contoured surface **604**. In different embodiments, raised peak member **220** may diminish in height in varying amounts to form varied contoured surfaces along any portion of longitudinal axis **20**, lateral axis **30**, and/or vertical axis **60**, or any combination thereof.

Referring now to FIG. **8**, article of footwear **100** worn on a foot **800** is illustrated making contact with a ball **802**. In some embodiments, article of footwear **100** may provide a portion of ball contacting surface **106** that is substantially inclined with respect to an outer portion of upper **102** where ball **800** may contact article **100** during various types of kicks. In an exemplary embodiment, ball contacting surface **106** may include raised peak member **220** for lowering the trajectory of a kicked ball. In this embodiment, raised peak member **220** may provide a relatively steep angle for contact with ball **800**. In some embodiments, raised peak member **220** may be wedge-shaped. In other embodiments, raised peak member **220** may be other shapes, including, but not limited to: pyramidal, trapezoidal, conical, and other geometric and non-geometric shapes.

FIGS. **9** and **10** illustrate an exemplary embodiment of gripping members **200** disposed on ball contacting surface **106**. In this embodiment, gripping members **200** may be arranged on medial side **16** of article **100**. In some cases, gripping members **200** may be generally associated with a portion of midfoot region **12** of article **100**. In other cases, gripping members **200** may be disposed on a portion of ball contacting surface **106** associated with the instep of a foot.

In different embodiments, gripping members **200** provided on ball contacting surface **106** may be made of varying materials including any of the materials used for ball contacting surface **106**. In some cases, gripping members **200** may be made of a substantially similar material as ball contacting surface **106**. In other cases, gripping members **200** may be made of a substantially different material than ball contacting surface **106**. In some embodiments, materials that enhance gripping in wet conditions may be used with ball contacting surface **106** and/or gripping members **200**.

Referring now to FIG. **10**, in some embodiments, overlay **400** may be disposed over substrate **402** in a pattern forming a plurality of hollows **1000** over ball contacting surface **106**. A first set of gripping members **1002** and/or a second set of gripping members **1004** may be disposed on substrate **402** within hollows **1000**. It will also be understood that gripping members may be optional on all or portions of ball contacting surface **106**.

In some embodiments, first set of gripping members **1002** may be disposed on a portion of ball contacting surface **106**. In some cases, first set of gripping members **1002** may be distributed uniformly on ball contacting surface **106**. In other cases, first set of gripping members **1002** may be distributed in a non-uniform manner on ball contacting surface **106**. In this exemplary embodiment, first set of gripping members **1002** generally have a first size D**1**. In some embodiments, second set of gripping members **1004** also may be disposed on a portion of ball contacting surface **106**. In some cases, second set of gripping members **1004** may be distributed uniformly on ball contacting surface **106**. In other cases, second set of gripping members **1004** may be distributed in a non-uniform manner on ball contacting surface **106**. In this exemplary embodiment, second set of gripping members **1004** generally have a second size D**2**. In an exemplary embodiment, first size D**1** of first set of gripping members **1002** is larger than second size D**2** of second set of gripping members **1004**. In other embodiments, first size D**1** may be smaller than second size D**2**. In yet other embodiments, first size D**1** and second size D**2** may be generally the same size.

In different embodiments, first set of gripping members **1002** and/or second set of gripping members **1004** may vary in size, height, and/or shape. First set of gripping members **1002** and/or second set of gripping members **1004** may be formed in various shapes, including but not limited to hexagons, circles, squares, rectangles, diamonds, ovals, stars, as well as other shapes. Generally, first set of gripping members **1002** and/or second set of gripping members **1004** may be any desired size and may be spaced apart by intervals of varying distances. In some cases, first set of gripping members **1002** and/or second set of gripping members **1004** may be sized and located so that the contact area between first set of gripping members **1002** and/or second set of gripping members **1004** and a ball may be optimized.

In different embodiments, the number of gripping members in first set of gripping members **1002** and/or second set of gripping members **1004** can vary. In some cases, first set of gripping members **1002** may comprise between 1 and 20 gripping members. In other cases, first set of gripping members **1002** can include more than 20 gripping members. In the current embodiment, first set of gripping members **1002** includes 19 gripping members. Also, in some cases, second set of gripping members **1004** can include between 1 and 40 gripping members. In other cases, second set of gripping members **1004** can include more than 40 gripping members. In the current embodiment, second set of gripping members **1004** includes 35 gripping members.

Referring now to FIG. **11**, in different embodiments, first set of gripping members **1002** and/or second set of gripping members **1004** may be arranged in patterns on ball contacting surface **106**. In an exemplary embodiment, first set of gripping members **1002** may be arranged in a first pattern **1100**. In some embodiments, first pattern **1100** of first set of gripping members **1002** may be disposed on a central portion of ball contacting surface **106** on medial side **16** of article **100**. In other embodiments, first pattern **1100** may be disposed on various portions of ball contacting surface **106**.

In an exemplary embodiment, second set of gripping members **1004** may be arranged in a second pattern **1104**. In an exemplary embodiment, second pattern **1104** of second set of gripping members **1004** may be disposed on an outer portion of ball contacting surface **106**. In the embodiment of FIG. **11**, the outer portion is disposed around the central portion, such

that second pattern **1104** surrounds the periphery **1102** of first pattern **1100** of first set of gripping members **1002**. In other embodiments, second pattern **1104** may be disposed on various portions of ball contacting surface **106**. In some embodiments, the arrangement of first pattern **1100** and/or second pattern may be sized and located so that the contact area with a ball may be optimized.

Referring now to FIG. **12**, article of footwear **100** worn on a foot **800** is illustrated making contact with ball **802** along medial side **16**. In some embodiments, article of footwear **100** may provide a portion of ball contacting surface **106** that is configured to come in contact with ball **802** during various types of kicks. In an exemplary embodiment, ball contacting surface **106** may include gripping members **200** for enhancing the ability to contact and control the ball when kicked. In an exemplary embodiment, gripping members **200** may be disposed along medial side **16** of article **100**. In some embodiments, gripping members **200** may be designed to make initial contact with ball **802** before ball contacting surface **106**. In other embodiments, gripping members **200** may be designed to make contact with ball **802** at substantially the same time as ball contacting surface **106**. For example, as shown in FIG. **2**, gripping members **200** have a similar height as the surrounding overlay **400** so as to be substantially flush with ball contacting surface **106**.

In some embodiments, gripping members **200** may include provisions that provide the wearer with the ability to apply different types of spin to ball **802**. In some embodiments, article of footwear **100** may include gripping members **200** with multiple surface orientations. Generally, elevated gripping members **200** may be provided with surface orientations that maximize the contact area between gripping members **200** and ball **802**. In some cases, these gripping member surfaces may be oriented to provide enhanced control of spin of ball **820** during kicking. In particular, multiple surface orientations may be provided for enhanced control of spin of ball **820** with each surface orientation associated with a certain type of kick or spin.

FIGS. **13** through **18** illustrate views of an alternate exemplary embodiment of article of footwear **1300**. Referring now to FIG. **13**, in this case, article **1300** may be substantially similar to the embodiment of article **100** discussed previously. In this embodiment, article **1300** may include upper **1302** and vamp portion **1304**. Upper **1302** and vamp portion **1304** may be substantially similar to the embodiments of upper **102** and vamp portion **104** discussed previously. Furthermore, in this embodiment, article **1300** includes ball contacting surface **1306**. Ball contacting surface **1306** may be used to enhance the ability to contact and control the ball when kicked. Generally, ball contacting surface **1306** may be associated with any portion of upper **1302**. In some cases, ball contacting surface **1306** may be associated with midfoot region **12** of upper **1302**. In some embodiments, ball contacting surface **1306** may extend from medial side **16** to the top of upper **1302**. In an exemplary embodiment, ball contacting surface **1306** extends substantially continuously from medial side **16** to the top of upper **1302**. Furthermore, in some cases, ball contacting surface **1306** may be disposed on a portion of upper **1302** directly above the instep, or top, of a foot. In other cases, ball contacting surface **1306** may extend into portions of forefoot region **10** and/or heel region **14**.

Generally, any materials discussed previously in regard to ball contacting surface **106** may be used for ball contacting surface **1306**. Examples of different materials include, but are not limited to, roughened leathers, rubbers, silastics, or any synthetic or natural elastomeric material such as styrene-butadiene, or polyurethane. In some embodiments, ball contacting surface **1306** may be made from a combination of one or more of such materials. In one embodiment, ball contacting surface **1306** may include a first portion located generally on top of upper **1302** that is made of padded natural or synthetic leather. Ball contacting surface **1306** also may include a second portion located generally on medial side **16** of upper **1302** that is made of a screen printed or applied layer of tactile material. Generally, any suitable tactile material may be used, including, but not limited to: rubbers, silastics, or any synthetic or natural elastomeric material.

Referring now to FIG. **14**, in some cases, article of footwear **1300** also may include textured surface **1308**. In this embodiment, textured surface is generally located in forefoot region **10** on medial side **16** of article **1300**. In other embodiments, textured surface may extend into a portion of midfoot region **12**. In some embodiments, textured surface **1308** may further enhance ball control. In an exemplary embodiment, textured surface **1308** may increase the grip of upper **1302**. In some embodiments, textured surface **1308** may be formed integrally with a portion of ball contacting surface **1306**. In different embodiments, textured surface **1308** may be formed from any of the materials used to form ball contacting surface **1306**. In some embodiments, textured surface **1308** may have a different amount of grip or tackiness than ball contacting surface **1306**. In some cases, textured surface **1308** may have more or less grip than ball contacting surface **1306**. In other cases, textured surface **1308** and ball contacting surface **1306** may have substantially similar amounts of grip. In one exemplary embodiment, textured surface **1308** may be a rougher surface than ball contacting surface **1306**.

As shown in FIG. **14**, a portion of ball contacting surface **1306** may include a plurality of gripping members **1400** disposed on medial side **16** of upper **1302**. In some embodiments, gripping members **1400** additionally may be associated with a portion of midfoot region **12** of article **1300**. In an exemplary embodiment, gripping members **1400** may be disposed on a portion of ball contacting surface **1306** associated with the instep of a foot on medial side **16**. In other embodiments, gripping members **1400** may be associated with one or more portions of forefoot region **10** and/or heel region **14**. In further embodiments, gripping members **1400** may be arranged on lateral side **18** and/or medial side **16** in any of forefoot region **10**, midfoot region **12**, and/or heel region **14**.

In some embodiments, gripping members **1400** may be made from a screen printed or applied layer of tactile material. Generally, any suitable tactile material may be used, including, but not limited to: rubbers, silastics, or any synthetic or natural elastomeric material. In other embodiments, gripping members **1400** may be made from any material used to make upper **1302**. Gripping members **1400** may be formed in various shapes, including but not limited to hexagons, circles, squares, rectangles, diamonds, ovals, stars, as well as other shapes.

Generally, gripping members **1400** may be any desired size and may be spaced apart by intervals of varying distances. In some cases, gripping members **1400** may be sized and located so that the contact area with a ball may be optimized. In other embodiments, gripping members **1400** may include one or more different sets of gripping members that are disposed on various portions of ball contacting surface **1306**. In some embodiments, gripping members **1400** may be disposed over ball contacting surface **1306** in a geometric pattern. In one exemplary embodiment, gripping members **1400** are arranged in a hexagonal or honeycomb pattern. With this arrangement, article **1300** may exhibit consistent ball control properties across the majority of ball contacting surface **1306**. In other embodiments, gripping members **1400** may be

arranged over ball contacting surface **1306** in any geometric-shaped pattern, regular pattern, or irregular pattern. It will also be understood that gripping members **1400** may be optional on all or portions of ball contacting surface **1306**.

FIG. **15** illustrates lateral side **18** of an alternate exemplary embodiment of article of footwear **1300** including ball contacting surface **1306**. In this embodiment, raised peak member **1520** is visible in profile rising above the surface of upper **1302**. In this embodiment, lateral side **18** of upper **1302** does not include ball contacting surface **106**. In other embodiments, ball contacting surface **1306** may extend to lateral side **18** of upper **1302**. In some embodiments, article of footwear **1300** may include shoe fastening system **300** and/or sole structure **310**, discussed previously.

Referring now to FIG. **16**, medial side **16** of article **1300** including ball contacting surface **1306** is illustrated. In some embodiments, ball contacting surface **1306** may include a plurality of padded members **1604** disposed over a first portion of vamp portion **1304** located generally on top of upper **1302**. Padded members **1604** may be made of any material used for ball contacting surface **1306** and/or upper **1302**. In some embodiments, padded members **1604** may be made of natural or synthetic leather. In an exemplary embodiment, padded members **1604** also may include foam or other suitable padding material disposed under natural or synthetic leather. In other embodiments, padded members **1604** may be formed by an overlay disposed over a substrate material.

In some embodiments, padded members **1604** may form a raised peak member **1520** that provides a relatively steep angle for contact with a ball. This configuration may be useful in indoor soccer where the top of the goal is lower than the top of the goal in outdoor soccer, requiring lower trajectories for kicks. In some embodiments, raised peak member **1520** may be wedge shaped. In other embodiments, raised peak member **1520** may be other shapes, including, but not limited to: pyramidal, trapezoidal, conical, and other geometric and non-geometric shapes.

In some embodiments, ball contacting surface **1306** also may include a second portion located generally on medial side **16** of upper **1302** that contains the plurality of gripping members **1400**. In one exemplary embodiment, gripping members **1400** may be formed by a printed tactile material disposed over a substrate **1602**. In some embodiments, substrate **1602** may be made of a smooth material. In other embodiments, substrate **1602** may be made of a tactile material. In different embodiments, substrate **1602** may have a different amount of grip or tackiness than gripping members **1400**. In some cases, substrate **1602** may have less grip than gripping members **1400**. In other cases, substrate **1602** and gripping members **1400** may have substantially similar amounts of grip. In other embodiments, substrate **1602** may be made of any suitable material, including, but not limited to similar materials used to make upper **1302** as described above.

Referring now to FIG. **17**, in some embodiments, padded members **1604** may be varied in thickness. In different embodiments, padded members **1604** may be varied in thickness at varying portions of ball contacting surface **1306**. In the exemplary embodiment of FIG. **17**, padded members **1604** form raised peak member **1520** near the top of vamp portion **1304**. In this embodiment, raised peak member **1520** is formed by a graduated increase in thickness of padded members **1604**. In this embodiment, shoe fastening system **300** is spaced offset to lateral side **18** of article **1300** to avoid interference with a ball that may be hit by raised peak member **1520**.

Referring now to FIG. **18**, raised peak member **1520** of ball contacting surface **1306** is depicted conforming to the geometry of contours illustrated in FIG. **6**. In some embodiments, raised peak member **1520** may be formed by varying the thickness of padded members **1604** disposed over ball contacting surface **1306**. In this embodiment, the thickness of padded members **1604** may vary from a fourth height H**4** at the apex of raised peak member **1520** to a fifth height H**5** along lateral axis **30** in a direction towards medial side **16**. Similarly, the thickness of padded members **1604** may vary from fourth height H**4** at the apex of raised peak member **1520** to a sixth height H**6** along longitudinal axis **20** in a direction towards forefoot region **10**. Moreover, fourth height H**4** may be substantially greater than fifth height H**5** and/or sixth height H**6**. In different embodiments, padded members **1604** also may vary in height along longitudinal axis **20** in a direction towards heel region **14** and/or along lateral axis **30** in a direction towards lateral side **18**. In different embodiments, raised peak member **1520** may diminish in height in varying amounts to form varied contoured surfaces along any portion of longitudinal axis **20**, lateral axis **30**, and/or vertical axis **60**, or any combination thereof, as previously discussed with regard to the embodiment of raised peak member **220**.

Referring now to FIG. **19**, an alternate embodiment of shoe fastening system **300** is illustrated for use with article of footwear **100** including ball contacting surface **106**. In some embodiments, shoe fastening system **300** may include provisions to tighten article **100** around a foot, including, but not limited to, one or more of: laces, buckles, hook and loop fasteners (such as Velcro®) as well as any other types of fastening systems. In an exemplary embodiment, shoe fastening system **300** may include tongue **302**, lace **304**, and tongue opening **306**, as discussed above in regard to FIG. **3**.

In some embodiments, shoe fastening system **300** may be configured to attach to one or more portions of ball contacting surface **106**. In one embodiment, shoe fastening system **300** may include one or more eyelets disposed in ball contacting surface **106**. The term "eyelet" as used throughout this detailed description and in the claims refers to a structure configured to receive a lace in an article of footwear. In some embodiments, an eyelet may be a small hole or perforation. In some cases, an eyelet may be a hole that is reinforced with a material, including but not limited to: metal, cord, fabric or leather. In other embodiments, an eyelet may be an opening formed by a loop of material including but not limited to: fabric, cord, leather or metal.

In one embodiment, a first eyelet **1900** may be disposed in substrate **402** of ball contacting surface **106** between portions of overlay **400**. In this embodiment, a second eyelet **1902** also may be disposed in substrate **402** of ball contacting surface **106**. With this arrangement, shoe fastening system **300** may secure ball contacting portion **106** to article **100** using lace **304** disposed through one or more of first eyelet **1900** and second eyelet **1902**.

In some embodiments, one or more of the eyelets disposed on ball contacting surface **106** may be arranged so that lace **304** does not interfere with ball contacting surface **106** when contacting a ball. In one embodiment, one or more of first eyelet **1900** and second eyelet **1902** may be arranged near an outer periphery of ball contacting surface **106**. In an exemplary embodiment, second eyelet **1902** may be located behind raised peak member **220**. With this arrangement, lace **304** may be disposed through first eyelet **1900** and/or second eyelet **1902** and may be used to tighten shoe fastening system **300** to ball contacting surface **106**. In other embodiments, additional eyelets may be included on portions of ball contacting surface **106**. Additionally, one or more eyelets may be

used with any of the embodiments of ball contacting surface described herein, including ball contacting surface **1306** on article **1300** described above.

While various embodiments of the invention have been described, the description is intended to be exemplary, rather than limiting and it will be apparent to those of ordinary skill in the art that many more embodiments and implementations are possible that are within the scope of the invention. Accordingly, the invention is not to be restricted except in light of the attached claims and their equivalents. Also, various modifications and changes may be made within the scope of the attached claims.

What is claimed is:

1. An article of footwear, comprising:

an upper including a forefoot region, a heel region and a midfoot region disposed between the forefoot region and the heel region;

a ball contacting surface disposed on the upper of the article of footwear, the ball contacting surface including a raised peak member disposed at a top portion of the upper adjacent to an entry hole for receiving a foot within the upper, said raised peak member having a first height at an apex of said raised peak member;

wherein said raised peak member diminishes from the first height to a second height that is smaller than the first height following a first contour along the longitudinal axis in the direction of the forefoot region;

wherein said raised peak member diminishes from the first height to a third height that is smaller than the first height following a second contour along the lateral axis in the direction of a medial side of the article of footwear;

the first contour and the second contour converging together at the apex of said peak member; and

wherein said raised peak member is substantially concave along the first contour along the longitudinal axis in the direction of the forefoot region and is substantially concave along the second contour along the lateral axis in the direction of the medial side; and

wherein the ball contacting surface and said raised peak member are comprised of an overlay disposed over a substrate material; wherein the overlay is arranged in a geometric pattern over the substrate; and wherein the thickness of the overlay forms the first height, the second height, and the third height.

2. The article of footwear according to claim **1**, wherein said raised peak member is substantially wedge-shaped.

3. The article of footwear according to claim **1**, wherein said raised peak member is disposed in front of the entry hole of the upper.

4. The article of footwear according to claim **1**, wherein the ball contacting surface is disposed over a portion of the upper in the midfoot region.

5. The article of footwear according to claim **1**, wherein the ball contacting surface and said raised peak member are made of a substantially rigid material.

6. An article of footwear, comprising:

an upper;

a sole;

a ball contacting surface disposed over a portion of the upper;

the ball contacting surface comprising a vamp portion including a raised peak member and a medial side portion;

wherein said raised peak member is disposed at a top of the vamp portion adjacent to an entry hole for receiving a foot within the upper;

wherein the ball contacting surface is formed by a substantially continuous raised overlay material extending from the medial side portion adjacent to the sole and across the top of the vamp portion; and

wherein said raised peak member is formed by a portion of the raised overlay material having a graduated increase in thickness at the vamp portion such that said raised peak member has at least two substantially concave contours extending from an apex of the said raised member along different directions, including (1) a first concave contour along a longitudinal axis in the direction of a forefoot region of the article of footwear, and (2) a second concave contour along a lateral axis in the direction of a medial side of the article of footwear; and

wherein the raised overlay material is arranged in a geometric pattern over a lower substrate material of the upper; and wherein the geometric pattern of the raised overlay material extends through the graduated increase in thickness at the vamp portion forming said raised peak member.

7. The article of footwear according to claim **6**, wherein said raised peak member diminishes from a first height to a second height along the longitudinal axis in the direction of the forefoot region of the article of footwear; and

wherein said raised peak member diminishes from the first height to a third height along the lateral axis in the direction of the medial side of the article of footwear.

8. The article of footwear according to claim **6**, wherein the ball contacting surface is disposed over the portion of the upper in a midfoot region of the article of footwear.

9. The article of footwear according to claim **6**, wherein the raised overlay material comprises a substantially rigid material.

10. The article of footwear according to claim **6**, wherein said raised peak member is substantially wedge-shaped.

11. An article of footwear, comprising:

an upper;

a ball contacting surface disposed over an exterior of the article of footwear, including a portion of a medial side of the upper;

the ball contacting surface comprising a raised overlay material and a lower substrate material;

wherein the raised overlay material is substantially continuous across the portion of the medial side of the upper;

the lower substrate material forming a plurality of hollows between portions of the raised overlay material;

wherein the ball contacting surface includes a plurality of gripping members disposed on the lower substrate material within the plurality of hollows; and

wherein the plurality of gripping members are substantially flush with the raised overlay material; and

wherein the raised overlay material is arranged in a first patter; and wherein the gripping members are arranged in a second pattern; wherein the gripping members further comprise: a set of gripping members having a first size; a second set of gripping member having a second size; and wherein the first size is larger than the second size; wherein the second pattern further comprises: the first set of gripping members disposed in a central portion of the ball contacting surface, the second set of gripping members disposed in an outer portion of the ball contacting surface; and wherein the outer portion surrounds the periphery of the central portion.

12. The article of footwear according to claim **11**, wherein the second pattern is arranged in an area of the ball contacting surface corresponding to an instep of a foot of a wearer.

13. The article of footwear according to claim 11, wherein the raised overlay material and the gripping members are made of a substantially rigid material.

14. The article of footwear according to claim 11, wherein the ball contacting surface is disposed in a midfoot region of the article of footwear; and

wherein a textured surface is disposed over a portion of the medial side of the upper in a forefoot region of the article of footwear.

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